

**CRAY**

**1988  
CUSTOMER SATISFACTION SURVEY  
REPORT OF FINDINGS**

**AUGUST 20, 1988**

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## GRI SURVEY OBJECTIVE

Measure GRI as the Standard of Value

Further Strengthen GRI by

Using Customer Satisfaction as a  
Key to Negative Edge

Identify Customer Satisfaction Survey  
and Address Attitudes/Concerns

Identify Steps to Enhance Customer  
Satisfaction



## **CRI SURVEY OBJECTIVE**

- Ensure CRI as the Standard of Value

- Further Strengthen CRI by:

- Using Customer Satisfaction as a Primary Competitive Edge

- Method:

- Conduct Customer Satisfaction Survey to Understand Attitudes/Concerns

- Outcome:

- Identify Steps to Enhance Customer Satisfaction

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On-Site

Notes

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## METHODOLOGY

	<u>1986</u>	<u>1987</u>	<u>1988</u>
United States			
Total	45	57	68
On-Site	18	26	25
Phone	27	31	43
United Kingdom			
Total			17
On-Site			8
Phone			9
Japan			
Total			9
On-Site			9
Phone			-
Total Interviews			94

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## METHODOLOGY

- Targeted Respondents Selected by CRI Regions as Person(s) Most Likely to:
  - Be Most Knowledgeable of CRI Performance
  - Influence Next Supercomputer Acquisition
- Targeted Respondents Sometimes Referred INPUT to Other Individuals Due to:
  - Timing of Interview
  - Intentional Delegation
- Several Declined to Participate

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## METHODOLOGY

- Standard Questionnaire Used
  - Mailed in Advance
- Candid Comments Actively Encouraged
- Interviews Done by Senior Industry Analysts
- Typical Interview Duration
  - On-Site = 1.5 Hours
  - Phone = 1 Hour

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## RATING SCALES

- Respondents Often Asked to Rate Their Attitudes on a Scale of 1 to 10

1 = Low

10 = High

- Respondents Given No Further Description of Rating Values
- INPUT Suggests Evaluating Response Summaries as Follows:

<u>Rating</u>	<u>Interpretation</u>
9 - 10	Excellent
7 - 8	Good
5 - 6	Fair
1 - 4	Poor

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# **EXECUTIVE OVERVIEW**

## **(Discussion Format)**

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**Cray Research, Inc.**

# **1988 Customer Satisfaction Survey**

## **Summary of Findings**

**August 1988**

**INPUT**



# **1988 Customer Satisfaction Survey**

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- **Executive Summary**
- **Observations and Issues**
- **Customer Assessment**
- **Regional Results**



## **1988 Results Show Improvement In A Number Of Key Areas. However, Some Challenges Remain and Some New Ones Have Emerged.**

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### **Key Satisfaction Results**

#### **Positive Results**

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- Significant improvement in mainframe reliability.
- Customer perceived improvement in peripheral reliability.
- Some improvement in meeting expectations.
- Strong vs. Competition, with superiority in some areas.
- Engineer skill levels have improved.
- Engineers better at diagnosing problems.
- Reduction in software repair times—Dramatic for 'C.'
- Local support seen as very good.

#### **Challenges**

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- Overall satisfaction with software still low, but some improvements have been seen.
- Software reliability is a key issue.
- Diagnostic tools still considered inadequate.
- Doubts remain about disk reliability, especially DD49s.
- Maintenance cost and contract flexibility are key issues.
- General dissatisfaction with responsiveness of corporate technical support.
- 65% of customers rated low last year are still rated low.
- Software security is a growing problem among government customers.





## **Customers Highlighted A Number Of Growing Concerns In Their Comments**

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- Viability of competitive products is seen as increasing among many customers.
  - "Cray may lose low end to competition" was recurring comment.
- Low-level headquarters support for field staff and customer is a growing problem.
  - Problems are addressed quickly by local staff, but are seen as disappearing into corporate process.
- Expectation of proactive maintenance has begun to emerge.
  - Engineer should fix soft errors before they become hard errors.
  - Potential problems should be fixed before they cause systems to crash.
- Lack of multilevel security is key weakness.
  - Customers with secure processing requirements may trade system performance for dedicated processor.



## **1988 Customer Satisfaction Survey**

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- **Executive Summary**
- **Observations and Issues**
- **Customer Assessment**
- **Regional Results**



## **1988 Results Were Analyzed To Identify Issues, Necessary Actions, and Identify Potential Problems Not Directly Covered In the Survey**

- Results of 1988 survey were analyzed to identify recurring and new issues, compare them with 1986/1987 results, and assess results of actions taken last year.
- Analysis of issues focused on problems in three areas:
  - Headquarters-controllable issues
  - Region-controllable issues
  - Customer-specific issues.
- Quantitative analysis based on satisfaction areas rated by customer (1 = very low, 10 = very high satisfaction).
- Customer responses were slotted into three categories:
  - High: Numerical responses of 9 and 10
  - Medium: 6, 7, or 8
  - Low: 1, 2, 3, 4, or 5
- This broad segmentation was evaluated, together with overall averages for each customer.
- Verbal comments were also used in the evaluation.





## Some Areas Of Both Hardware And Software Showed Significant Improvement Over Last Year's Results

	AVERAGE RATING		
	1987	1988	CHANGE
Diagnostic Procedures	6.1	8.2	2.1
'C' Repair Time	5.8	7.2	1.4
'C' Response Time	6.6	7.5	0.9
Mainframe Reliability	7.8	8.5	0.7
System Software Problem Response	7.4	8.0	0.6

- Two areas that were previously highly rated, declined in 1987, and recovered somewhat in 1988:

Parts Availability	7.8	8.2	0.4
Hardware Documentation	7.4	7.7	0.3

- Although diagnostic procedures improved, hardware diagnostic tools are seen as less than acceptable. Customers' comments include:
  - Diagnostic tools less than adequate
  - Engineer should have better tools
  - "They are horrible"



## Other Areas Continued To Reflect Strong Satisfaction

	AVERAGE RATING			Also Cited 86/87
	1987	1988	CHANGE	
Hardware:				
Maintenance Response Time	8.9	9.2	0.3	√√
Maintenance Repair Time	7.8	8.4	0.6	
Installation Consulting	8.7	8.6	- 0.1	√√
Escalation Procedures	7.6	8.4	0.8	
On-Site Customer Engineer	8.3	8.7	0.4	√√
Field Hardware Technical Support	8.3	8.7	0.4	√√
Software:				
Operating System Field Support	7.9	8.1	0.2	
• However, two areas that were rated high last year declined this year:				
'C' Field Support	8.2	7.2	- 1.0	
Station Field Support	8.2	7.8	- 0.4	

- These changes reflect a general trend to view field and corporate support with less satisfaction than local support.



## Overall Satisfaction With System Software Changed Little From Last Year

	AVERAGE RATING			Also Cited 86/87
	1987	1988	CHANGE	
Reliability	7.3	7.2	- 0.1	√√
Response	7.4	8.0	0.6	
Repair	6.7	7.1	0.4	√√
Training	7.5	7.8	0.3	√√
Documentation	7.5	6.8	- 0.7	√√
Escalation	7.1	7.3	0.2	√√
Field Support	8.0	8.1	0.1	√√

- Customer comments still reflect serious concerns:
  - Fortran and 'C' releases are poorly coordinated and tested. Development groups do not talk to each other, and the releases are not thoroughly tested.
  - Problems fixed in one release reappear in the next.
  - Temporary fixes provided by headquarters staff are not incorporated in the next release.
  - Analysts are reluctant to escalate problems, because work won't get done.





## Overall, Software Reliability Showed Little Change Or Declined Somewhat

	AVERAGE RATING		
	1987	1988	CHANGE
System Software	7.1	7.2	0.1
Compilers/Languages:			
Fortran	7.5	6.9	- 0.6
'C'	6.8	6.8	--
Station Software	7.7	7.2	- 0.5
Networking Software	--	7.4	--
Tools/ Utilities	--	7.4	--
Libraries	--	7.9	--



## In A Number of Key Areas, The Difference Between Decision Importance And Cray's Meeting Decision Criteria Is Wide.

DECISION CRITERIA	DECISION CRITERIA		CRAY RATING	DIFFERENCE
	RANK	RATE		
Overall System Performance	1	9.2	8.0	- 1.2
Hardware Reliability	2	8.9	7.8	1.1
System Software Reliability	3	8.7	7.0	- 1.7
Price Performance	4	8.6	7.2	- 1.4
Networking / Connectivity	5	8.3	7.4	- 0.9
System Software Functionality	6	8.1	6.8	- 1.3
System Software Performance	6	8.1	7.4	- 0.7
System Software Usability	7	8.0	7.3	- 0.7
System Software Maintenance / Support	7	8.0	7.6	- 0.4
Overall System Price	8	7.9	6.8	- 1.1
Conversion Ease	9	7.6	7.2	- 0.4
Application Software Availability	10	7.0	7.2	0.2
Documentation	11	6.9	6.5	- 0.4
Training	12	6.1	6.7	0.6

- These suggest a number of areas that should receive specific emphasis.



## Both Government and Commercial Customers Rated Cray The Highest In Two Key Areas Of The Survey

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- Customers were asked to rate Cray in relationship to IBM, CDC, and DEC in four areas:
  - System Performance
  - Hardware Maintenance
  - Software Maintenance
  - Marketing Support
- Overall, Cray rated very high compared to the competition; Cray rated significantly higher than DEC and CDC in all areas.
- Cray rated comparable to IBM in hardware and software maintenance; Cray rated significantly higher in system performance and marketing support.

	<u>CRAY</u>	<u>IBM</u>
System Performance	8.3	7.4
Marketing Support	8.0	7.5
Hardware Maintenance	8.5	8.5
Software Maintenance	7.6	7.6

- Nearly all customers, whether satisfied or dissatisfied, rated Cray highest in system performance. Dissatisfied customers tended to rate Cray lower in all other areas even if dissatisfaction is related to a specific area.
- An estimated 20% of the government customers declined to provide a rating.





# 1988 Customer Satisfaction Survey

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- Executive Summary
- Observations and Issues
- Customer Assessment
- Regional Results



## **In Assessing Individual Customer Satisfaction, Focus Was Placed On Establishing A Consistent, Repeatable Method Of Evaluation**

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- In prior years, the process of identifying dissatisfied customers focused on determining an overall mean and analyzing the comments of customers falling below the mean to assess whether they were dissatisfied.
- INPUT believes that, although analysis of comments is necessary, use of just these two criteria can impart too much subjectivity and can fail to identify potential problem accounts.
- In 1988, the process focused on determining customers that fall significantly below the mean (bottom quartile) in any of four areas:
  - Ranking in Overall Satisfaction
  - Ranking in Hardware Satisfaction
  - Ranking in Software Satisfaction
  - Ranking in General Management Satisfaction
- Customers are identified if they rated low in any of the four areas and their comments suggested a strong dissatisfaction.
  - All customers classified as dissatisfied in 1987 were in the bottom quartile this year.
  - Satisfaction of some has improved, but is still in the bottom quartile.
  - Some customers have specific concerns even though they would be considered satisfied.



## At 26 Of The Surveyed Sites, Respondents Indicated A Significant Level Of Overall Dissatisfaction

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### CENTRAL

University of Minnesota  
General Motors Research  
Los Alamos National Labs

### EASTERN

Grumman Aero  
Westinghouse Electric  
Naval Underwater Research

### SOUTHERN

Mobil Oil  
General Dynamics  
Arco Oil  
Sun Exploration

### WESTERN

NASA/Ames/NAS/Research  
Boeing/BCS  
Aerospace Corporation  
San Diego Supercomputer  
Standard

### JAPAN

Recruit  
Honda  
Toshiba  
Nissan  
Mitsubishi  
Ntt  
Aichi Technical Institute  
Century Research

### UNITED KINGDOM

Harwell Labs  
Merlin Geophysical  
European Weather Center

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## A Number of Customers Have Gained In Overall Satisfaction

	<u>1987</u>	<u>1988</u>	<u>CHANGE</u>	<u>CUSTOMER PERCEPTION</u>
University of Illinois	6.5	8.8	2.3	Increased
ATT Bell Labs.#	6.2	8.3	2.1	Increased
General Dynamics*	5.2	6.3	1.1	Unchanged***
Exxon USA	6.9	7.8	.9	Increased
Grumman Aero	6.5	7.3	.8	Increased
Los Alamos National Labs/LANL	5.9	6.5	.6	Unchanged
Exxon PRC	**	**	**	na

\*Customer retained on the problem list due to specific problem area(s).

\*\* Would only respond "Very High," "Highly Satisfied," etc.

\*\*\* Refers to question 33A—Has your satisfaction with Cray improved, remained unchanged, or declined?

# Average of two accounts





## The Majority Of Customers That Were Rated Low in 1987 Had Similar Feelings In 1988, And There Were A Number Of Additions

<u>CUSTOMER</u>	<u>AVERAGE RATING</u>			<u>PRIMARY CAUSE</u>		
	<u>1987</u>	<u>1988</u>	<u>CHANGE</u>	<u>HDW</u>	<u>SFT</u>	<u>MGT</u>
Westinghouse Electric	--	5.9	--	6.8	5.5	6.0
Grumman Aero**	6.5	7.3	-.8		5.9	
Mobil Oil**	6.8	6.1	-.7		4.7	
University of Minnesota**	5.8	6.5	.7		5.7	
Boeing/BCS**	6.8	6.5	-.3		5.8	4.8
Arco Oil**	6.1	6.3	.2	6.3	5.8	
General Dyn/Tx**	5.2	6.3	1.1	5.4	6.8	6.4
Naval Research	--	7.0	--			5.8
Sun Exploration**	6.8	7.3	0.5		5.7	
NASA Ames/NAS**	7.4	7.4	--			
Gen. Motors Research**	6.8	7.2	.4		6.8	
San Diego Supercomputer	--	6.4	--		4.9	
Aerospace Corporation	--	7.5	--		6.3	
Los Alamos Nat. Lab/LANL	5.9	6.5	0.6		5.8	
Standard	--	6.8			6.2	

\*\* Indicates number of years on list (Two \*\*'s indicate 1986 and 1987)



## Expanding The Survey To International Locations Resulted In The Addition Of Several Customers To Lower Ratings

CUSTOMER	AVERAGE RATING	PRIMARY CAUSE		
	1988	HARD	SOFT	MGT
Merlin Geophysical	5.6		4.8	4.0
Harwell Labs	7.4		7.2	
European Weather Center	8.1		7.1	
Recruit	6.3	5.8	6.3	
Honda	6.3		6.0	4.8
Toshiba	7.1	6.7		6.8
Nissan	7.7	6.9		6.8
Mitsubishi	6.3	6.0	6.1	
NTT	6.3	5.3	6.9	5.2
Aichi Technical Institute	5.7	5.8	5.6	5.5
Century Research	5.1	5.0	4.9	6.6

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## Overall Results Indicate A General Increase In Satisfaction In The Past Year

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- Overall results indicate progress has been made, but comments indicate stronger opinions in areas of dissatisfaction.
- Primary concerns revolve around Cray's ability to deliver on promises made to deliver high-quality, fully tested software.
- Customers are pleased with changes made at the local site and now expect similar improvements at headquarters.
- Customers generally have high regard for marketing staff, but need interaction that is less sales oriented.
- Although many ratings did not show major increases, efforts have resulted in abating erosion of ratings in key areas such as peripheral reliability.
- Results for this year have set the stage for major improvements in the coming year.



# 1988 Customer Satisfaction Survey

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- Executive Summary
- Observations and Issues
- Customer Assessment
- Regional Results





## Satisfaction Results Varied By Region With Very Little Change Overall

	<u>AVERAGE RATING</u>		<u>NUMBER OF HIGHEST RATINGS</u>	<u>NUMBER OF MEDIUM RATINGS</u>	<u>NUMBER OF LOWEST RATINGS</u>
	<u>1987</u>	<u>1988</u>			
Western	7.6	7.7	4	89	3
United Kingdom	-	7.7	13	81	2
Southern	7.2	7.6	3	89	4
Eastern	7.9	7.5	7	82	7
Central	7.8	7.3	9	79	8
Japan	-	6.4	0	64	32

- In the U.S., the Western, Southern, and Eastern Regions had comparable ratings. The Central region had the lowest rating.
- With the exception of Japan and the UK, most regions had a consistent number of high and low ratings, with most responses in the medium category.
  - Japan had an exceptionally high number of low responses, reflecting a general dissatisfaction with hardware and software reliability and the lack of Japanese documentation.
  - The UK had a comparatively high number of responses in the highest rating category.
- Compared to the competition, Cray was rated highest in the Central and Eastern Regions.
  - In the Eastern Region, IBM was rated significantly higher in marketing support.
  - In the Southern Region, IBM and DEC were rated higher in all categories except marketing support.



## Several Customers Rated Cray High In All Categories, While Four Rated Very Low Overall

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<u>CUSTOMER</u>	<u>RATING</u>	<u>REGION</u>
CONOCO	9.4	Central
General Electric (AEBG)	9.4	Eastern
Dept. of Energy/Richland	9.4	West
Egg Idaho (DOE/INEL)	9.3	West
B.P. Exploration	9.2	United Kingdom
Boeing Computer Services (Alabama)	9.1	Eastern
Air force (AFGWC)	9.1	Central
Scientific Computer Center	9.0	Southern
Air Force (AFWL)	9.0	Central
Westinghouse	5.9	Eastern
Aichi Technical Institute	5.7	Japan
Merlin Geophysical	5.6	United Kingdom
Century Research	5.1	Japan

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## Central Region Results

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- Fortran Remains a Problem in the Region, Although Some Gain Has Been Made:

	<u>AVERAGE RATING</u>		<u>Change</u>
	<u>1987</u>	<u>1988</u>	
Fortran Repair Time	5.1	5.4	0.3
Fortran Field Support	6.4	6.4	--

- Additional Areas that Have Emerged Include the Following:

'C' Repair Time - 5.7

Corporate Technical Support:

Operating System - 5.0

Fortran - 4.6

Operating System Documentation - 5.9

Escalation:

'C' - 5.3

Networking - 5.3

Customers Whose Ratings Improved:

University of Illinois

Customers Rated in the Bottom Quartile:

University of Minnesota\*

General Motors Research\*

Los Alamos National Labs

\* Also Dissatisfied in 1986/1987

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## Three Areas Represent Challenges In All Regions

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- Hardware maintenance price, rated at 5.6, is a concern to nearly all customers, but the actual dollars are not the major concern. A summary of customer-expressed interests includes the following:
  - Customers are more interested in maintenance support that is tailored to their needs.
  - They are more interested in pricing flexibility than the actual dollars.
  - They are frequently willing to pay more if the service meets their specific needs.
  - Based on customer comments, INPUT believes that Cray needs to be more flexible and do a better job of marketing the value of on-site support. Customers may not be aware of the value they are receiving compared to support by the competition.
- Fortran repair time is a key issue, but local support is not an issue.
  - Customers see corporate technical support as the primary problem.
  - They consider that a time of 6 to 12 months to fix a problem is unacceptable.
  - One customer (GE Aircraft) says it has had an outstanding Fortran repair problem for 14 months.
- Corporate Technical Support is a significant issue overall.
  - Customers see problems "disappearing" into a black hole.
  - Some analysts are reluctant to escalate problems for this reason.





# **Central Region Account-Specific Concerns and Problems**

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## **University of Minnesota**

- Fortran and 'C' Don't Fully Utilize Cray 2 Power
- Debuggers Unavailable or Inadequate (Cray 2)
- Primary Problems are CFT77 and I/O Libraries
- CFT77 - Many Vectorization Problems

## **General Motors Research**

- Dissatisfied with Performance and Functionality of CFT and CFT77
- Some Bugs Not Addressed until Several Releases Later
- Extremely Slow Corporate Response

## **Los Alamos National Labs**

- Fortran Compiler Unreliable/Many Bugs
- Bugs Repeated across Versions
- Software Is a Maintenance Nightmare
- Problem Fixes Often Create Other Problems



## Eastern Region Results

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- Recognized Gain Made in a Previous Problem Area:

	<u>AVERAGE RATING</u>		
	<u>1987</u>	<u>1988</u>	<u>Change</u>
'C' Reliability	6.0	7.5	1.5

- Additional Areas that Have Emerged Include the Following:

Corporate Technical Support:

Fortran - 5.6  
Station - 5.4  
Networking - 5.8

Tools and Utilities:

Problem Escalation - 6.1  
Functionality - 5.4

- Customers Whose Satisfaction Improved:  
ATT Bell Labs
- Customers Rated in the Bottom Quartile:  
Grumman Data Systems\*  
Westinghouse Electric  
Naval Underwater Research

\* Also Dissatisfied in 1986/1987

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## **Eastern Region Account-Specific Concerns and Problems**

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### **Westinghouse Electric**

- CFT is Unreliable. Have to Maintain Backups to 1.1 Due to Application Criticality
- User Application Stopped After Conversion from 1.14 to 1.15
- Station Software Is Marginally Functional

### **Grumman Aero**

- New Features Don't Work (CFT77)
- Key Problems in Fortran, Archiving, and SSD
- Slow Response to Critical Problems

### **Naval Underwater Research**

- Poor Debugging Aids
- Fortran Compiler Not Upward or Downward Compatible
- Poor Tape Error Recovery



## Southern Region Results

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- Some Improvement Realized in Three Areas:

	<u>AVERAGE RATING</u>		
	<u>1987</u>	<u>1988</u>	<u>Change</u>
'C' Escalation	6.5	6.7	.2
Fortran Repair Time	6.6	7.3	.7
Parts Availability	6.0	6.8	.8

- Additional Areas that Have Emerged Include the Following:

- Hardware Maintenance Price - 5.2
- Peripheral Reliability - 5.5
- Networking Software  
Documentation - 5.7  
Functionality -5.5

- Customers Whose Satisfaction Improved:

Exxon USA

Exxon PRC

General Dynamics (However, Customer Retained on Listing Due to High Hardware Dissatisfaction.)

- Customers Rated in Bottom Quartile:

Mobil Oil\*

General Dynamics/TX\*

Arco Oil\*

Sun Exploration\*

\* Also Dissatisfied in 1986/1987

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## **Southern Region Account-Specific Concerns and Problems**

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### **Mobil Oil**

- Very Little Software Testing Done Before Release
- Running CFT 1.14BF3/Lots of Problems/Cray Indicates Later Releases Are Worse
- Poor Support for Remote VAX Workstations

### **General Dynamics/TX**

- Extremely Poor Support for Workstations
- Released Software Poor/Requires Many Mods
- Mods Frequently Unreliable
- No Mod Control

### **Arco Oil**

- Operating System Lacks Operating Commands
- New Releases Not Thoroughly Tested
- Lack of Performance Tools

### **Sun Exploration**

- CFT Has Problems
- Poor Tape Error Recovery
- CPU "Parking Problem" Must Be Solved for Multi-CPU Mainframe



## Western Region Results

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- Sizeable Improvement Noted for 'C' Repair Time:

	<u>AVERAGE RATING</u>		
	<u>1987</u>	<u>1988</u>	<u>Change</u>
'C' Repair Time	5.5	7.0	1.5
Fortran Repair Time	6.9	6.8	- .1

- Specific Areas that Emerged Include the Following:
  - 'C' Escalation Procedures - 6.6
- Customers Whose Satisfaction Improved:
  - None of significance noted
- Customers Rated in the Bottom Quartile:
  - NASA Ames/NAS\*
  - Boeing/BCS\*
  - Aerospace Corporation
  - San Diego Supercomputer (Low rating is only in software)
  - Standard

\* Also Dissatisfied in 1986/1987

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## **Western Region Account-Specific Concerns and Problems**

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### **NASA Ames/NAS**

- No Vectorization
- System Functionality, Flexibility Suffer
- Debuggers Less Than Functional

### **Standard**

- General Lack of Features
- Front-end Processor Poorly Coded (Station)
- No Resource Management or Accounting Tools

### **Aerospace Corporation**

- CFT77 Needs Work. Too Big. Too Slow
- System Disappears During Station Execution
- Foreign Dataset Conversion a Problem

### **San Diego Supercomputer**

- Generally Dissatisfied with Software Functionality
- Dissatisfied with Station and Networking Support

### **Boeing/BCS**

- UNIX Parameter Passing Poor. Incomplete Set of XXX.H Files
- 'C' Compiler Aborts (Testing 3.1 Under COS 1.14)
- For COS 1.14, Conflicts Between Libraries and Compilers. Cray Can't Resolve
- Significant Problem with Inflexibility in Tailoring Support Terms



## **International Regions, Included For The First Time, Showed Some Strong Similarity In Ratings To US Regions And Some Strong Differences**

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- In the United Kingdom Region, overall results were similar to US regions.
  - Concerns were generally the same in hardware and software reliability.
- British Petroleum Exploration was among four customers with overall 'High' rating. BP rated its overall satisfaction at 9.2. Merlin Geophysical was among the lowest rating, with a 5.6.
- The Japan Region had the lowest overall rating and the highest number of areas that are of concern. There are several reasons:
  - Japanese customers have a higher overall expectation of perfection.
  - The Japanese have great difficulty in working with English publications.
  - They have a greater need to interact more frequently to discuss all problems and concerns.





## Japan Region Results

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- Japanese customers noted numerous problems. Examples include:

	<u>Rating</u>
- Parts Availability	5.9
- Local Support - Station	5.9
- Fortran Reliability	5.8
- Escalation Procedures - Networking	5.8
- Peripheral Reliability	5.7
- Operating System Reliability	5.7
- Corporate Technical Support - Fortran	5.7
- Hardware Repair Time	5.6
- Networking Software Reliability	5.5
- Escalation Procedures - 'C'	5.5
- System Software Documentation (Avg. All Categories)	5.4
- Installation Consulting	5.3
- Hardware Escalation Procedures	5.2
- Corporate Technical Support - 'C'	5.0
- Training (Avg. All Categories)	4.9

- Five areas were noted to be particularly low:

- Performance -'C'	4.0
- Hardware Documentation	3.3
- Reliability -'C'	3.0
- Functionality -'C'	2.5
- Hardware Maintenance Price	2.0



## **Japanese Region Account-Specific Concerns and Problems**

---

### **Recruit**

- Too Many Bugs In System/ Whole System Down
- Lack Of Utility Tools
- Hardware Maintenance And Fixes Take Too Long
- Maintenance Fee Expensive

### **Honda**

- So Much Trouble In Operating System
- COS Functionality Lower Than Competitors'
- Insufficient Support
- Lack of Japanese Documentation
- Maintenance Far Too Expensive
- Set Up User Group In Japan

### **Toshiba**

- Disk Drive Troubles
- Hardware Consulting Doesn't Fit Local Conditions
- Many Bugs/Low Speed In CFT77
- Poor Tools For Tuning Fortran

### **Nissan**

- Consulting Doesn't Fit Local Conditions
- Maintenance Price Too Expensive
- Maintenance Takes Too Long
- Cray Needs Japanese Company



## United Kingdom Region Results

---

- Overall results for the UK region were generally comparable to US regional results.
- However, several specific areas emerged as concerns:

	<u>RATING</u>
- Corporate Technical Support - Networking	6.0
- Amount Of Information About Problem Resolution	5.9
- Hardware Maintenance Price	5.3



## **United Kingdom Region Account-Specific Concerns and Problems**

---

### **European Weather Center**

- COS 1.16 Is Immature Product
- Still Finding Errors in Compiler
- Specific Problem Areas: COS, CFT, CFT77, VMS Station

### **Harwell Labs**

- CFT77 Compiler Time Longer Than CFT
- 'C' Execution Speeds Poor
- Still Finding Errors in Compiler
- VMS Station Unreliable

### **Merlin Geophysical**

- Software Support Limited
- Model 'A' IOP Prone to Power Outage
- High Memory Buffer Faults
- High Turnover of Engineers
- VAXStation Difficult to Use





## **A Number Of General Conclusions Can Be Drawn From The Customer Ratings And The Comments**

---

- **Cray Has...**
  - Excellent Products
  - Highly Dedicated Staff
  - Highly Loyal Staff
  
- **Cray Needs To Provide...**
  - Reliable Software
  - Reliable Peripherals
  - Increased Corporate Communications
  - Better Hardware Diagnostic Tools
  - Improved Tape Support
  - Field Upgradability
  
- **Cray Also Needs To...**
  - Respond To Competition
  - Provide Mainframe Pricing Flexibility
  - Provide Migration Paths
  - Improve Hardware/Software Security
  
- **Customers Would Like...**
  - More Cray-Initiated, Executive-To-Executive Interaction
  - To Understand Cray's Vision Of The Future



## **Based On Customer Ratings And Comments, INPUT Believes That Emphasis Should Be Placed On Three Corporate Objectives**

---

### **CONTROL**

Tightly Control Quality of Software Products. Reschedule Software Releases as Necessary to Provide Necessary Quality Assurance.

### **COORDINATION**

Coordinate among Product Development Groups to Ensure Consistency from Release to Release. Features and Error Correction in One Release Should Be Incorporated in All Subsequent Releases.

### **COMMUNICATIONS**

Establish Procedures to Have More Interaction Between Cray Corporate Executives and Customer Corporate Executives. Communicate Cray's Commitment and Vision of the Future and Instill Sense of Cray as the Preferred Provider.

**INPUT**



# ANALYSIS OF FINDINGS

INPUT



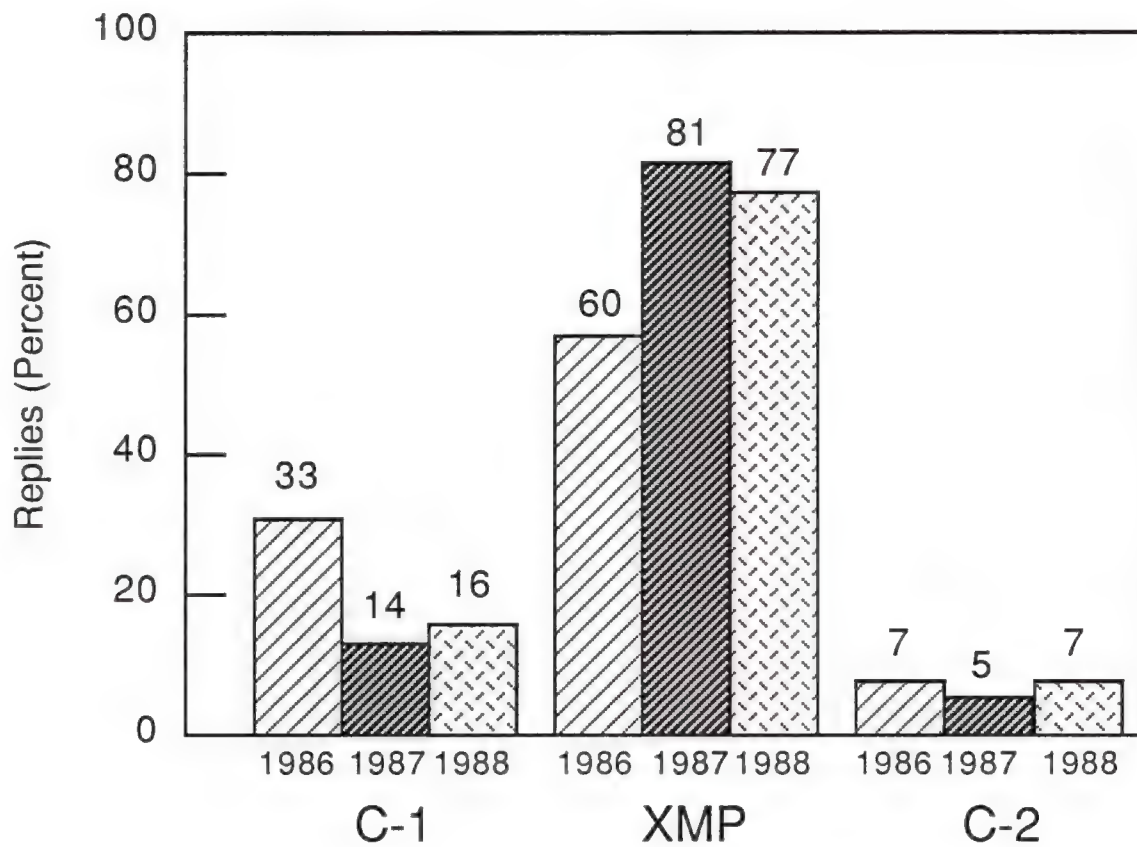
# **CUSTOMER PROFILE**

INPUT





## PRIMARY MODEL TYPE



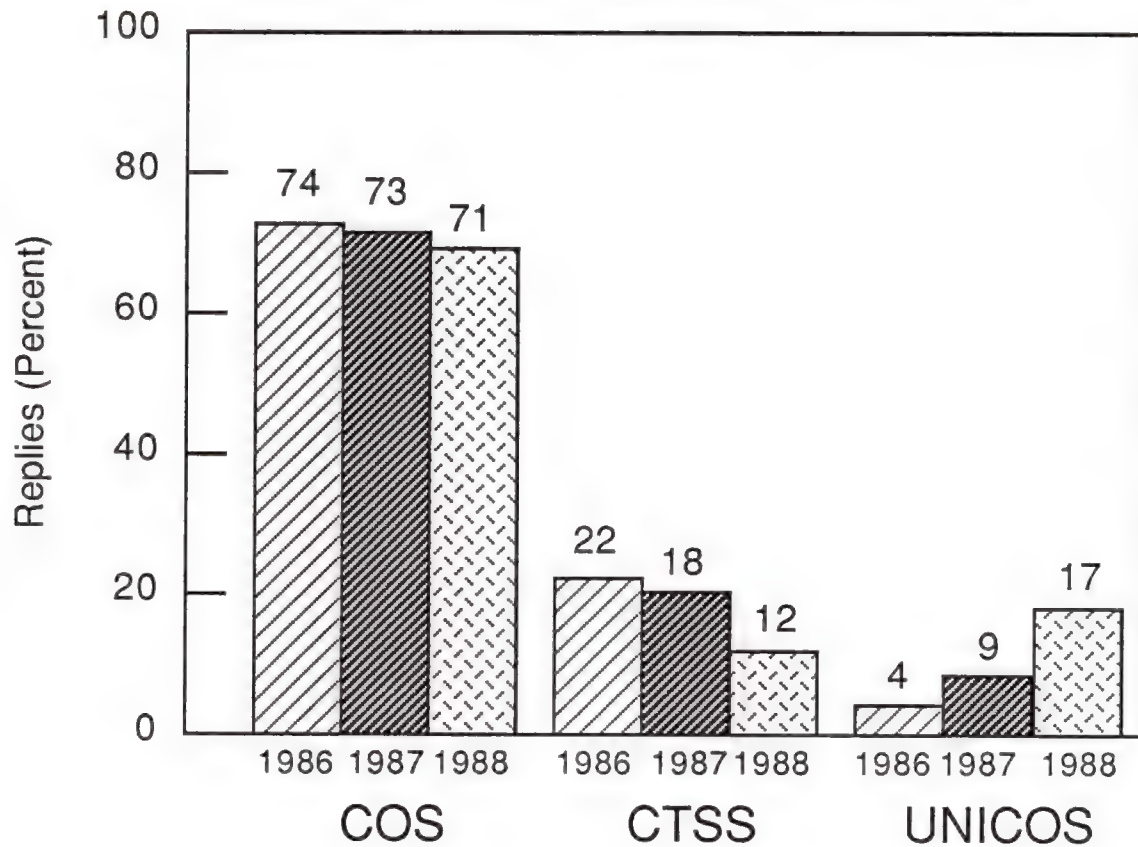
Q1A: MODEL TYPE

MODEL	1986		1987		1988	
	#	%	#	%	#	%
C-1	15	33	8	14	7	8
XMP	27		46	81	72	84
C-2	3	7	3	5	7	8
TOTAL	45	100%	57	100%	86	100%

INPUT



## PRIMARY OPERATING SYSTEM



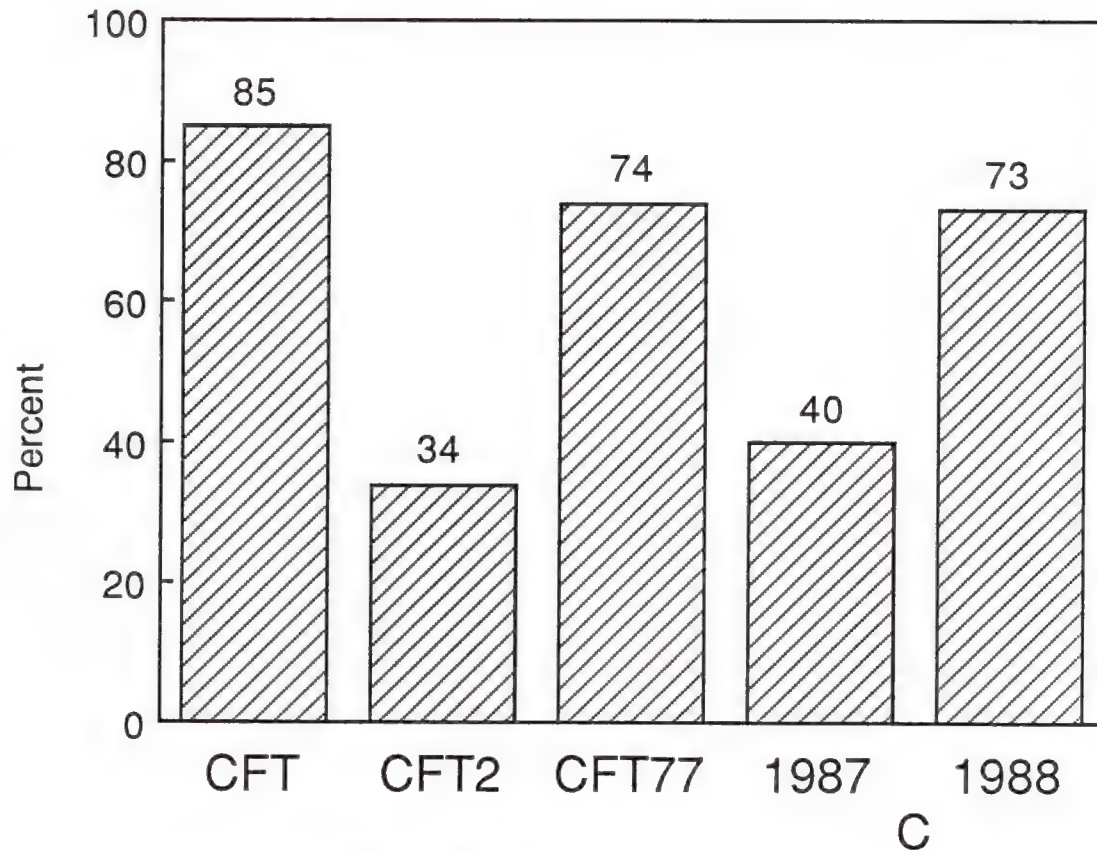
Q1C: PRIMARY OPERATING SYSTEM

TYPE	1986		1987		1988	
	#	%	#	%	#	%
COS	33	74	42	73	61	71
CTSS	10	22	10	18	10	12
UNICOS	2	4	5	9	15	17
TOTAL	45	100%	57	100%	86	100%

INPUT



## SYSTEM SOFTWARE USED (LANGUAGES, ETC.)



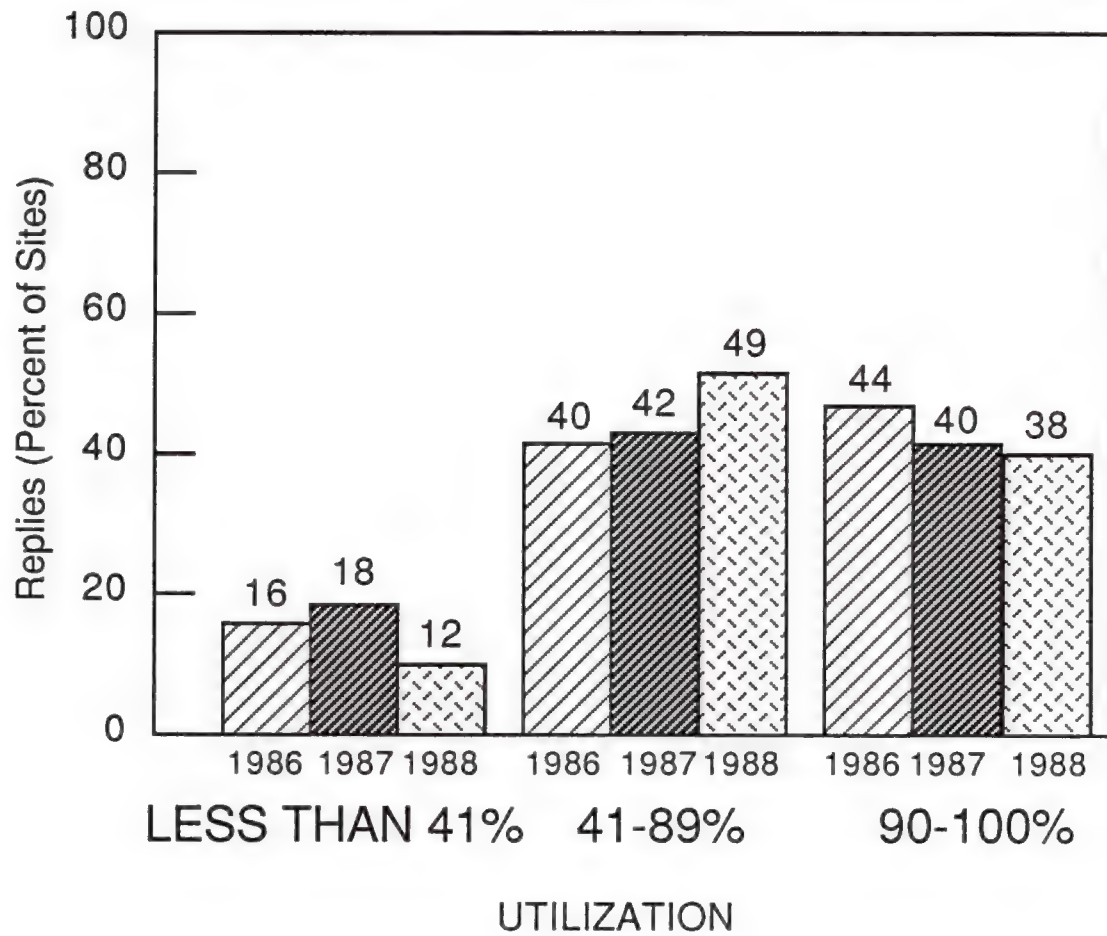
### Q1E/F: FORTRAN/C COMPILERS USED

TYPE	1987		1988	
	#	% SITES	#	% SITES
FORTTRAN:				
CFT			73	85
CFT2			29	34
CFT77			62	74
C	23	40	63	73
TOTAL MENTIONS	23	N/A	227	NA

INPUT



## UTILIZATION PROFILE



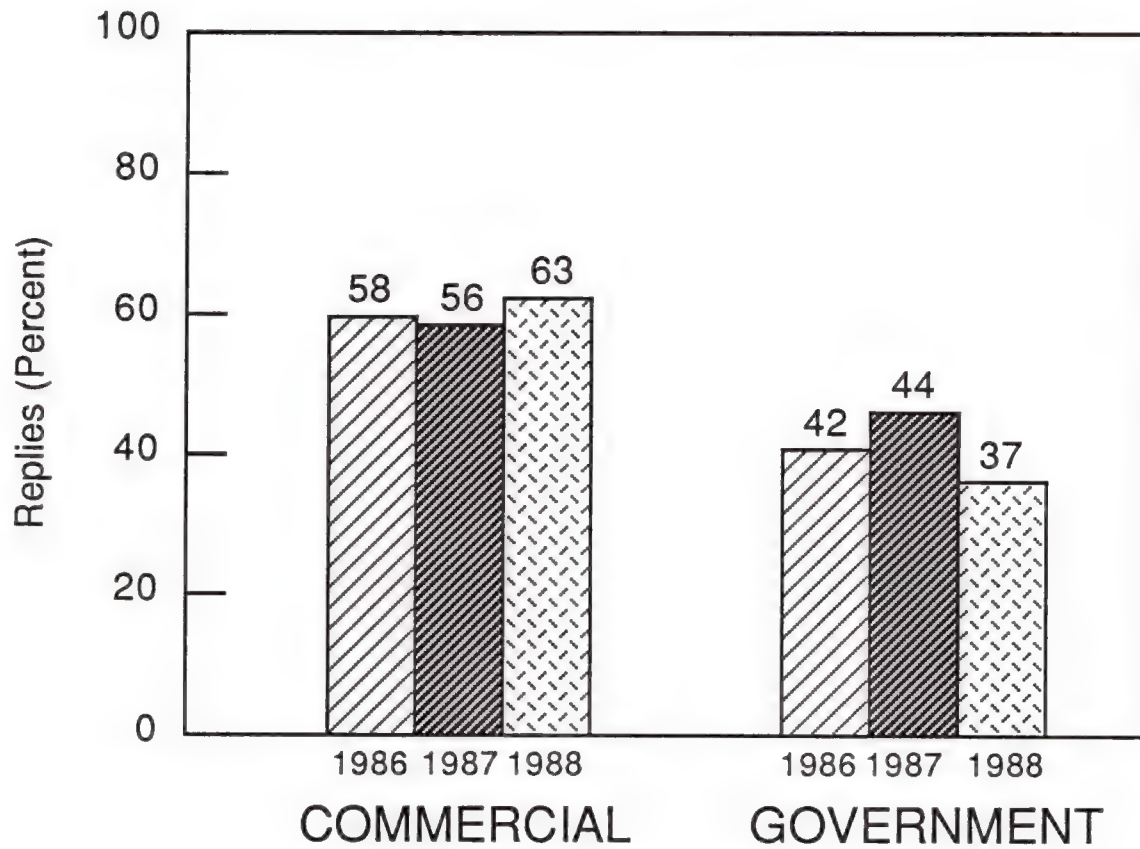
Q6: AVERAGE MONTHLY UTILIZATION FOR PAST 6 MONTHS

INPUT





## TYPE OPERATIONS

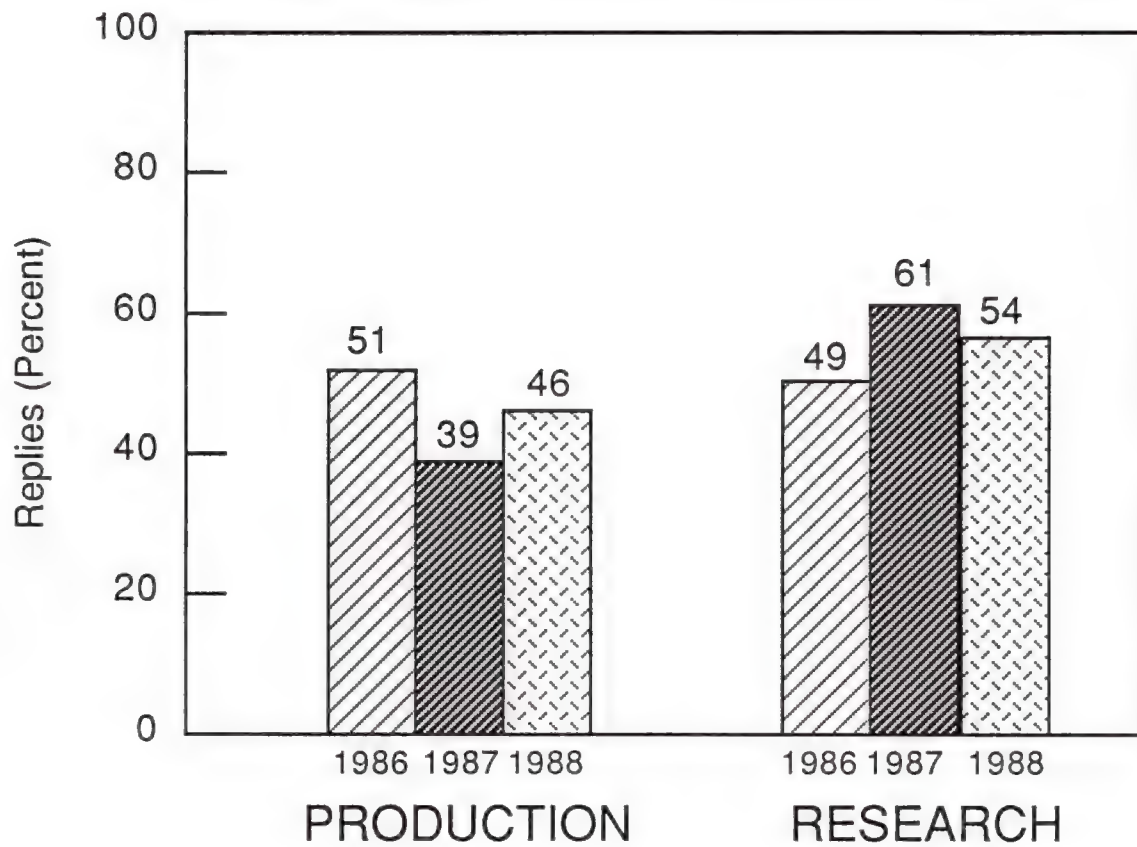


TYPE OPERATIONS	1986		1987		1988	
	#	%	#	%	#	%
COMMERCIAL	26	58	32	56	53	62
GOVERNMENT	19	42	25	44	32	38
TOTAL	45	100%	57	100%	86	100%

INPUT



## RESEARCH PRODUCTION PROCESSING



Q1D: PROCESSING TYPE (PRIMARY SYSTEM)

	1986		1987		1988	
	#	%	#	%	#	%
PRODUCTION	23	51	22	39	42	46
RESEARCH	22	49	34	61	44	54
TOTAL	45	100%	56	100%	86	100%

INPUT

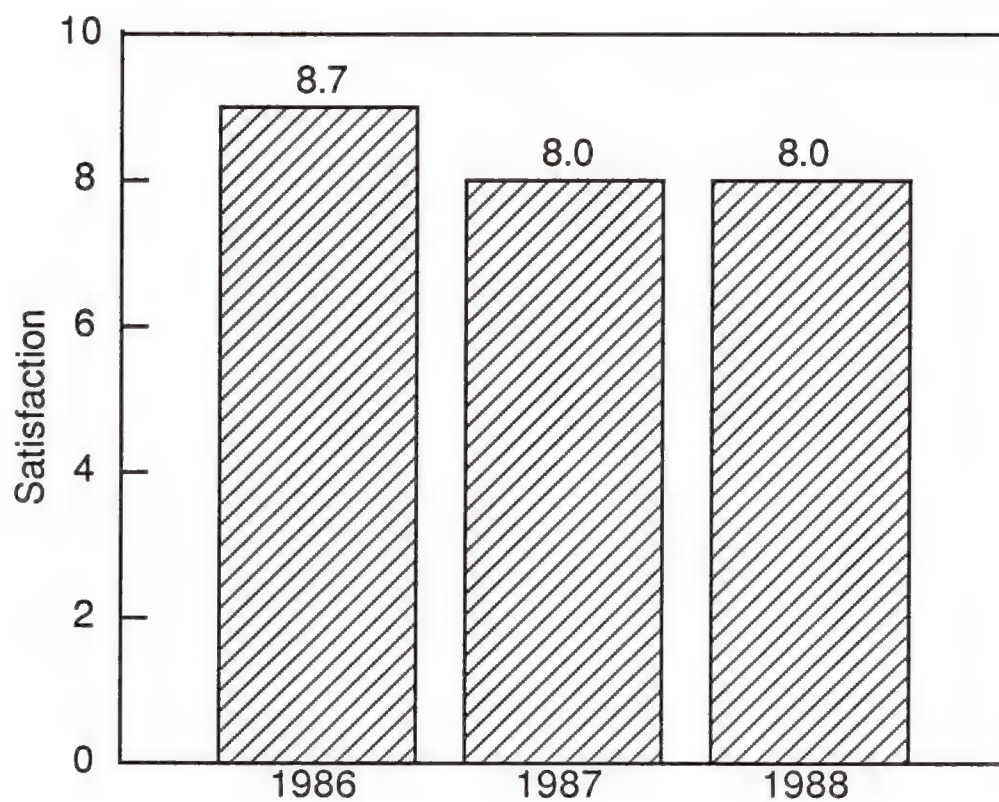


**OVERALL ATTITUDES  
AND  
DECISION CRITERIA**

INPUT



## "MEETING EXPECTATIONS"



### Q25: EXTENT LIVING UP TO EXPECTATIONS

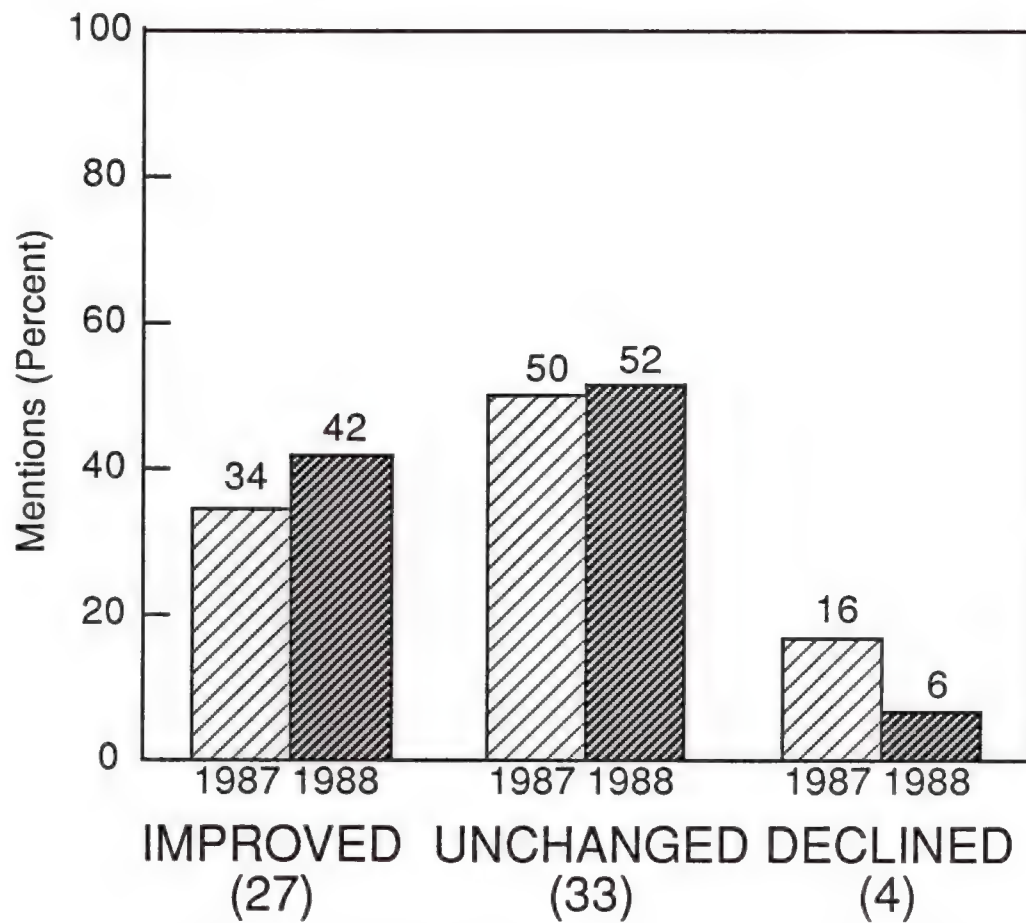
	MEAN	MIN	MAX	STD. DEV.	CASES
1988	8.0	2	10	1.6	82
1987	8.0	3	10	1.7	56
1986	8.7	5	10	1.3	45
1987-COMM	7.9	3	10	1.6	31
1987-GOVT	8.2	3	10	1.7	25

INPUT





## OVERALL SATISFACTION TREND



Q33: OVERALL SATISFACTION TREND

# OF CASES=64

INPUT



## CUSTOMERS WITH IMPROVED SATISFACTION IN PAST YEAR

<u>COMPANY</u>	<u>REASON</u>
NASA Ames/NAS	Changes in Software Organization
University of Texas	Site Personnel Provide Excellent Support
NASA Lewis	UNICOS 3.0 Installation Improvement over 2.1
Grumman Data Sys.	New Marketing Personnel
Livermore Labs/LCC	Site Engineers Work More to Company Schedule
DOE/Richland	Had Time to Learn System
Livermore Labs/MFE	Responsiveness in Fixing Cray 2 Problems
Phillips Petroleum	Front-End Archiving
University Minnesota	Hardware Maintenance Has Improved Significantly
Exxon/USA	Software Reliability Better
Air Force/AFWL	Software Support Improved
Schlumberger	New Rep. and Site Engineer
NASA Marshall	New System Resulted in Happier User Group
General Motors Res.	Some Progress in Fixing Software Problems

INPUT



## CUSTOMERS WITH IMPROVED SATISFACTION IN PAST YEAR

<u>COMPANY</u>	<u>REASON</u>
Lockheed/LMSC	Better Software—Fewer Bugs
NCI Research	More Optimistic Software Outlook
ADNOC DPS	Shorter Time to Resolve Software Problems
Standard Oil Prod.	Improvement in Software Support
Sandia Nat. Labs	Engineers Working with Customer Schedule
Rockwell/ISC	New Site Engineer—More Frequent Sales Contacts
Harwell Labs	Vigorous Dialogue
NASA/Ames/ZOS	Adaptation to Difficult Problems
Univ. of Illinois	Hardware Maintenance and Reliability
Univ. of London	Attractive Pricing with Second Hardware
NCAR	Keeping Us More Informed about Specifics Early On

INPUT



## CUSTOMERS WITH DECLINED SATISFACTION IN PAST YEAR

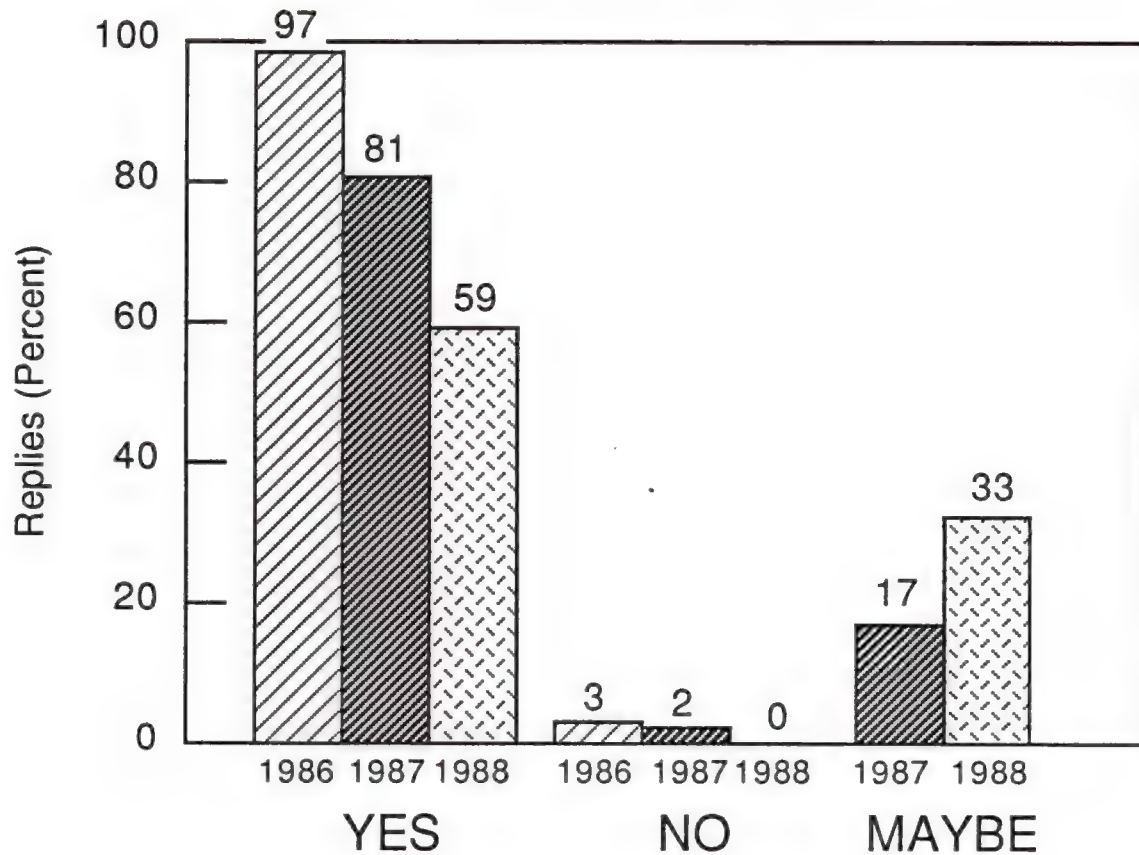
<u>COMPANY</u>	<u>REASON</u>
Shell/KSEPL Shell	Overloading of Machine
European Weather Centre	Concern with COS and Other Software Problems
Naval Research Lab.	Lack of Experienced On-Site Analysts
Boeing Computer Services	Lack of Financial Flexibility

INPUT





## BUY CRAY TOMORROW?



Q37: BUY CRAY TOMORROW?

RATING	1986		1987		1988	
	#	%	#	%	#	%
YES	36	97	42	81	49	63
NO	1	3	1	2	0	-
MAYBE	NA	NA	9	17	27	37
TOTAL	37	100%	52	100%	76*	100%

\*Of 83 total, 7 were 'Other' responses. Primarily government installations that must competitive bid.

INPUT



## WOULD YOU BUY A CRAY TOMORROW?

- Of 49 "Yes" Responses
  - 41 Like System Speed and Company Direction
  - 5 Indicated Being Locked-In
- Of 27 "Maybe" Responses
  - 9 Qualified Their Answer
  - 4 Must Competitive Bid

INPUT



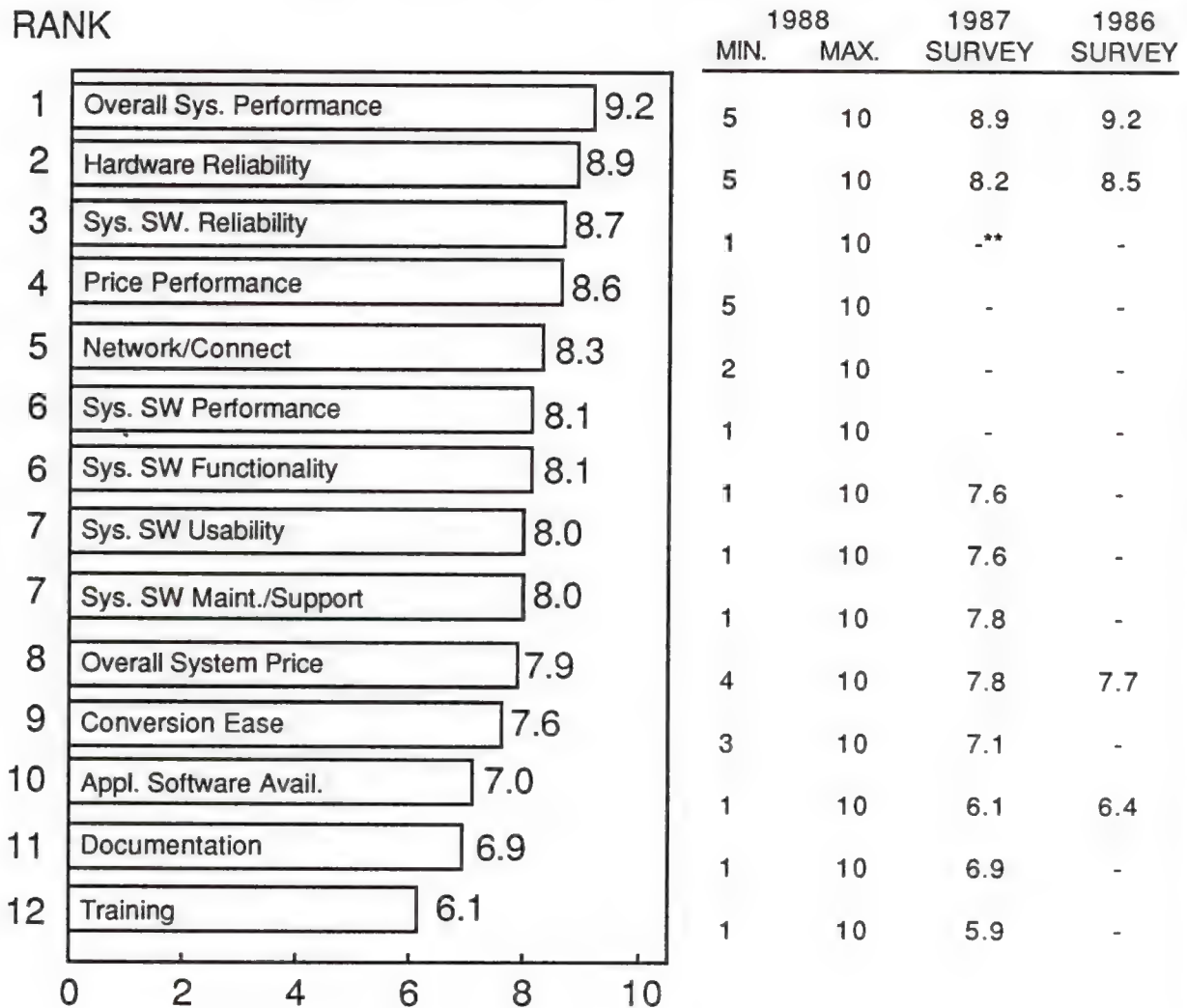
## WOULD YOU BUY A CRAY TOMORROW?

- Examples of Comments
  - Only Game in Town (104, 121, 126, 130)
  - In "High End" Supercomputer, Cray Is Still Superior to Competition (106, 122)
  - Depends on Software and Applications (110)
  - There Are Other Alternatives (ETA, Convex) (125)

INPUT



## DECISION CRITERIA IF BUY TODAY\* IMPORTANCE RATING



\* Questions 2A-2H

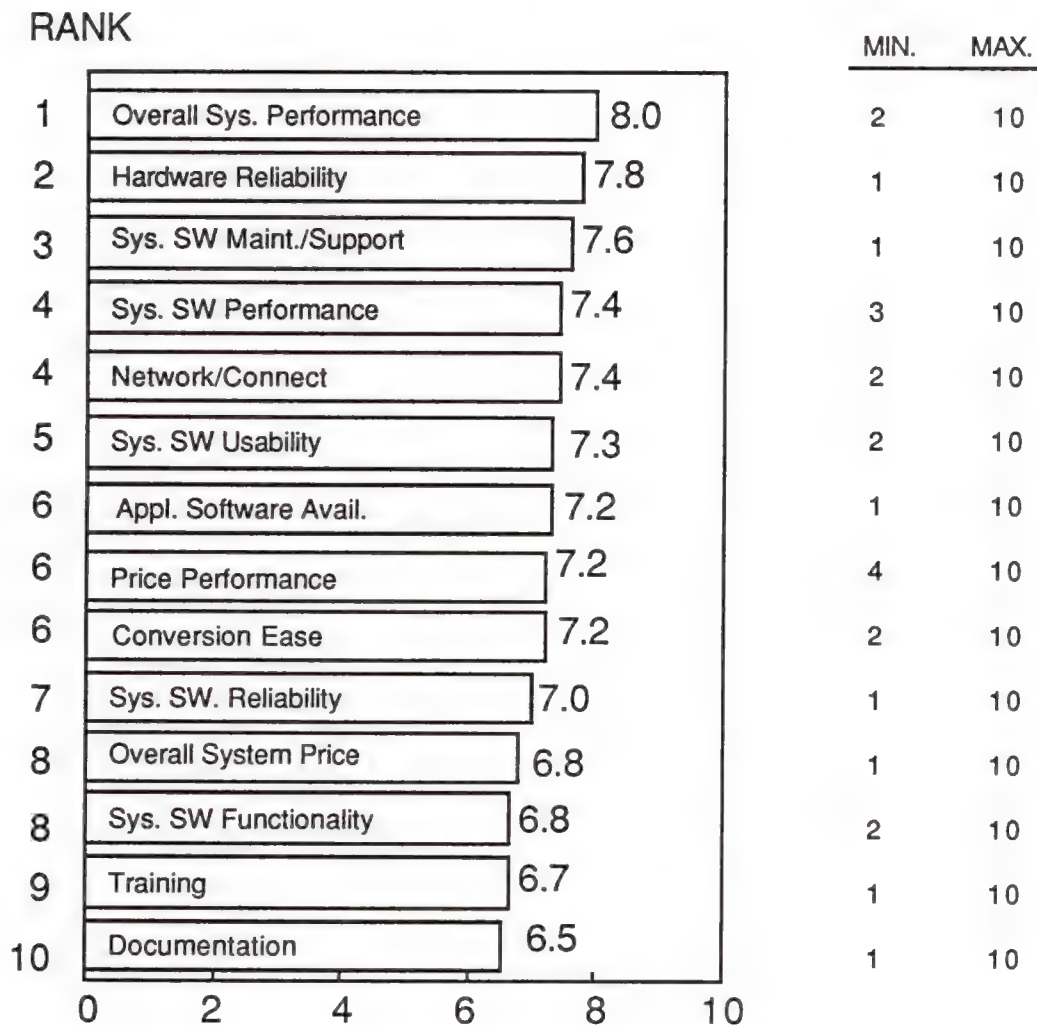
\*\* Not Asked in Previous Survey(s)

INPUT





## CRAY MEETING DECISION CRITERIA\*



\*Questions 2A-2H

INPUT



## OTHER DECISION CRITERIA

- Wide Variety of Responses
- Upgradability/Expandability Most Frequently Mentioned (11)
- Others Reflect
  - Product Futures
  - Connectivity (Network and Peripherals)
  - Company Condition/Track Record
  - Responsiveness to Needs/Concerns
  - Application Availability/Quality

INPUT

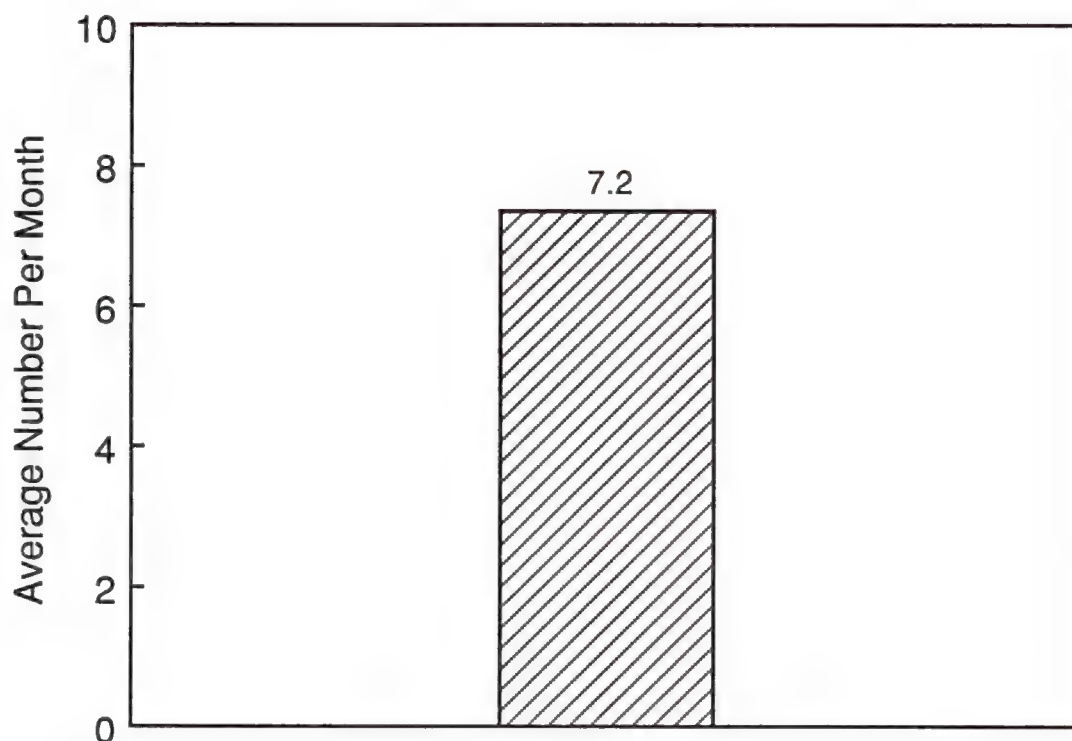


# **HARDWARE RELIABILITY/SUPPORT**

INPUT



## OUTAGES PER MONTH



Q7: NO. OUTAGES PER MONTH

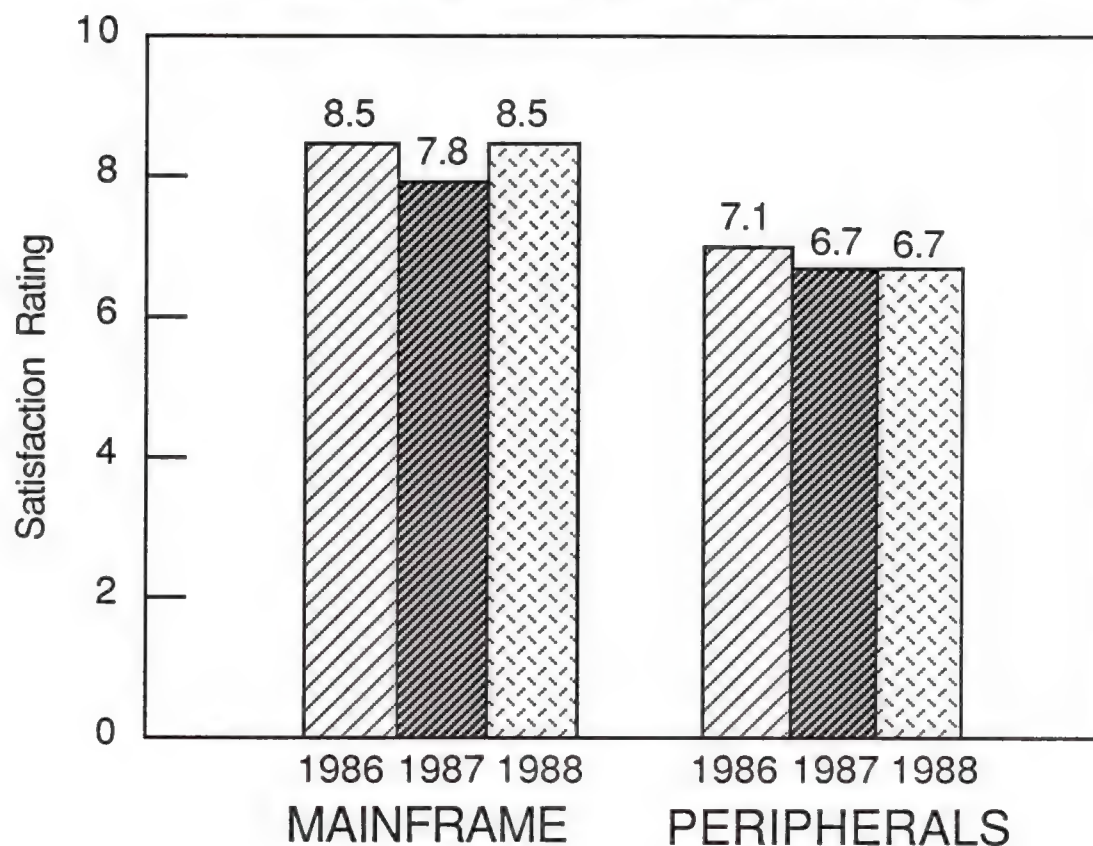
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
OUTAGES—1988	7.2	0	106	13.2	78

INPUT





## HARDWARE SATISFACTION MAINFRAME/PERIPHERALS



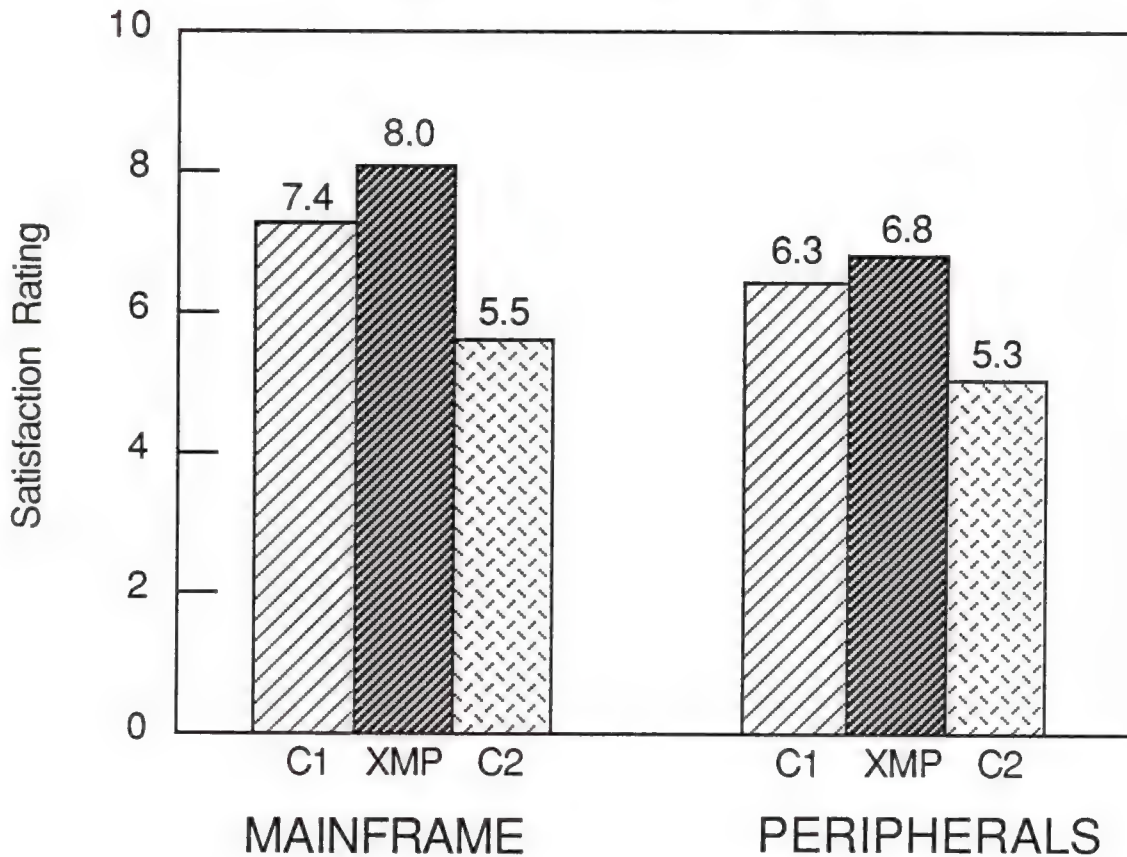
### Q10A.B: MAINFRAME/PERIPHERAL RELIABILITY

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
Mainframe 1988	8.5	2	10	1.4	82
Mainframe 1987	7.8	2	10	2.0	57
Mainframe 1986	8.5	2	10	1.8	44
Peripheral 1988	6.7	1	10	2.3	82
Peripheral 1987	6.7	2	10	2.0	57
Peripheral 1986	7.1	2	10	1.8	42

INPUT



## HARDWARE RELIABILITY BY TYPE OF SYSTEM



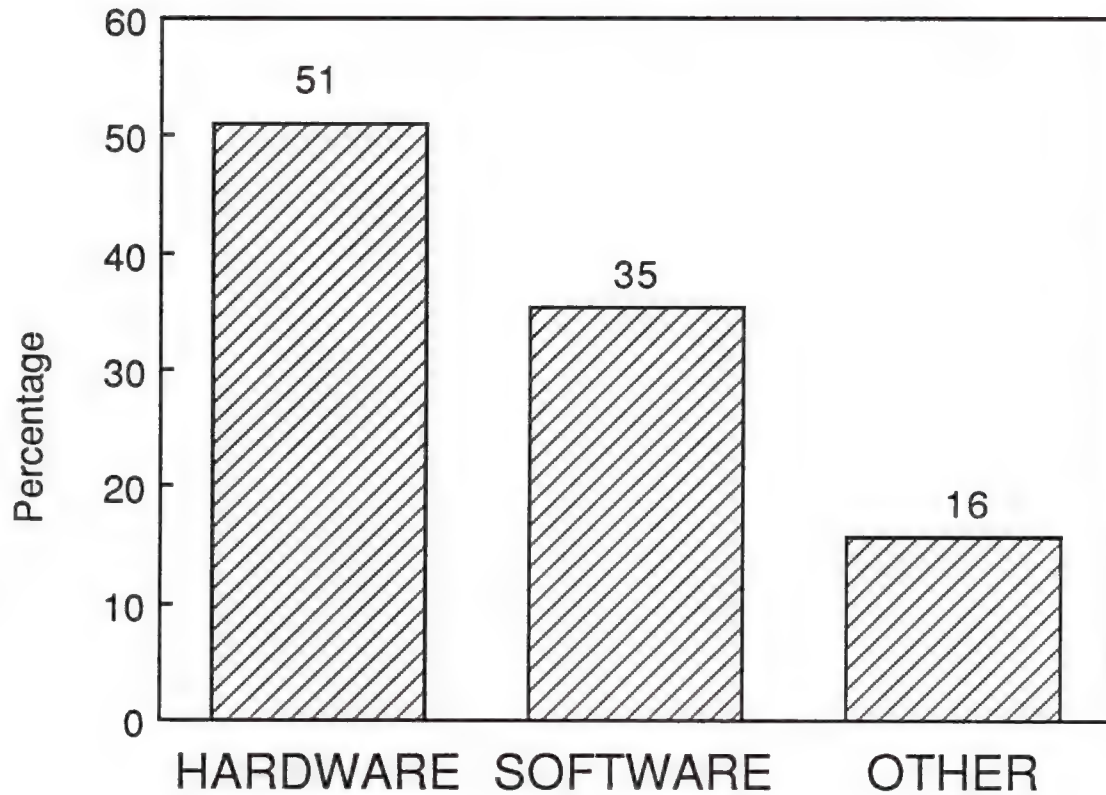
### Q10A.B: MAINFRAME/PERIPHERAL RELIABILITY

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
<b>MAINFRAME</b>					
Cray 1	7.4	4	10	2.0	8
XMP	8.0	3	10	1.8	46
Cray 2	5.5	2	9	NA	2
<b>PERIPHERAL</b>					
Cray 1	6.3	2	10	2.6	8
XMP	6.8	3	10	2.6	46
Cray 2	5.3	4	6	NA	3

INPUT



## SYSTEM OUTAGE CAUSE\*



### Q7A, B, C: HARDWARE, SOFTWARE OR OTHER INTERRUPTIONS

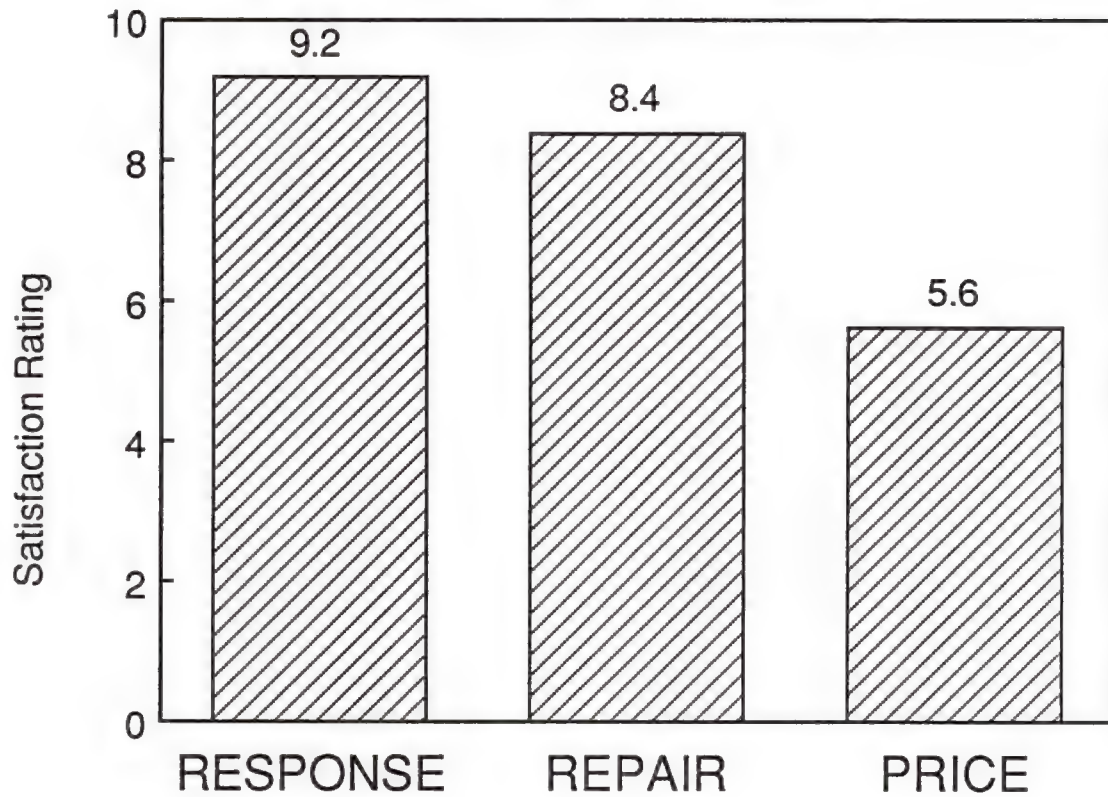
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
HARDWARE—1988	51	8	100	26.9	77
SOFTWARE—1988	35	0	85	24.2	74
OTHER—1988	16	0	72	16.7	74

\* AVERAGE TOTAL MORE THAN 100% DUE TO ROUNDING

INPUT



## MAINTENANCE SATISFACTION RESPONSE, REPAIR, PRICE



Q10C.D.E: HARDWARE MAINTENANCE RESPONSE, REPAIR TIME AND PRICE

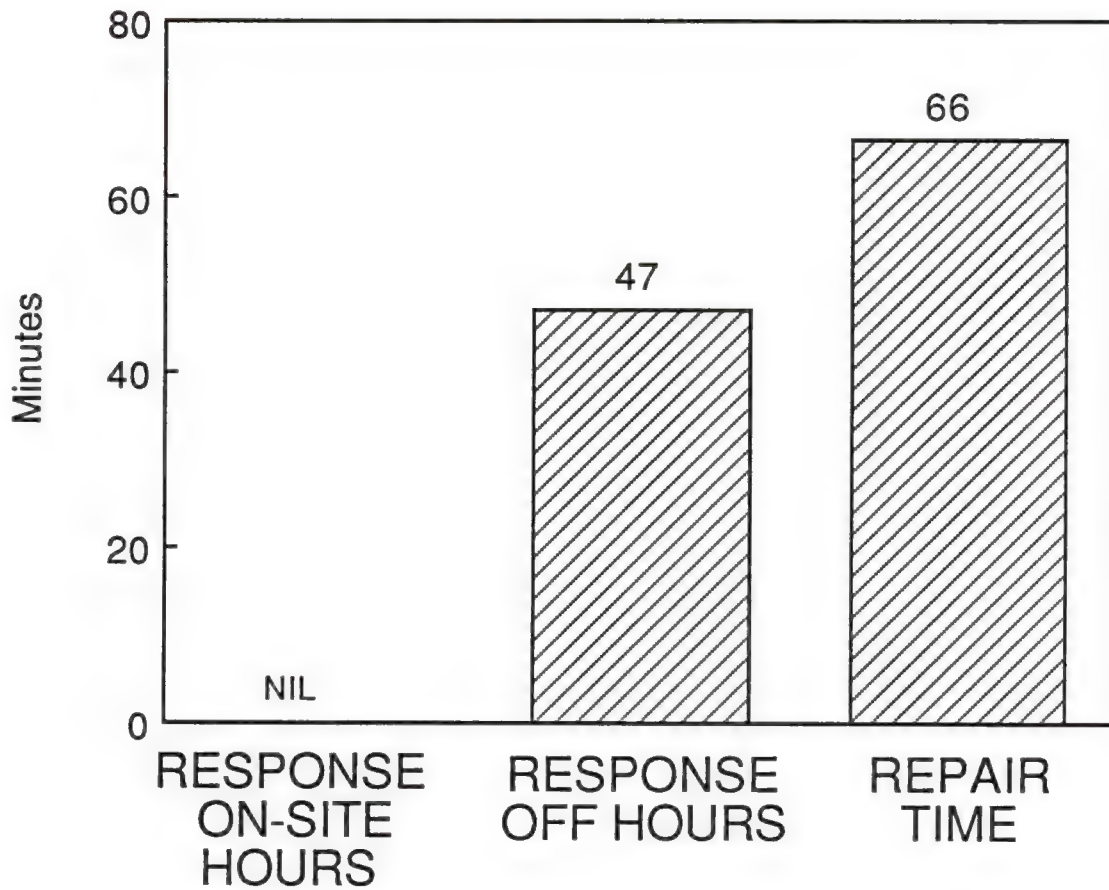
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RESPONSE—1988	9.2	6	10	0.92	82
REPAIR—1988	8.4	3	10	1.60	81
PRICE—1988	5.6	1	10	2.51	73

INPUT





## AVERAGE RESPONSE/REPAIR TIME



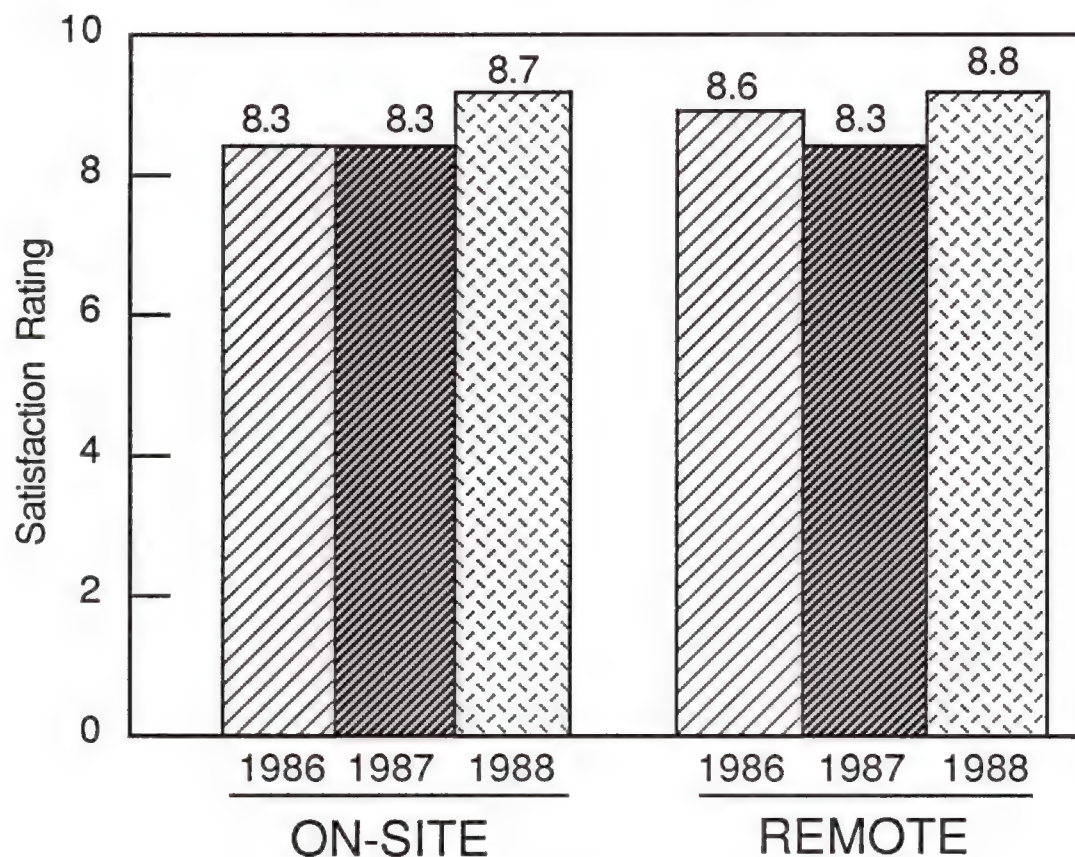
### Q8A.B.9: TIME TO RESPOND AND REPAIR MACHINES

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
REGULAR HOURS—1988	3.8	0	15	3.3	82
OFF HOURS—1988	46.7	0	150	25.4	78
REPAIR TIME—1988	66.0	5	240	42.1	77

INPUT



## CE SKILL LEVEL



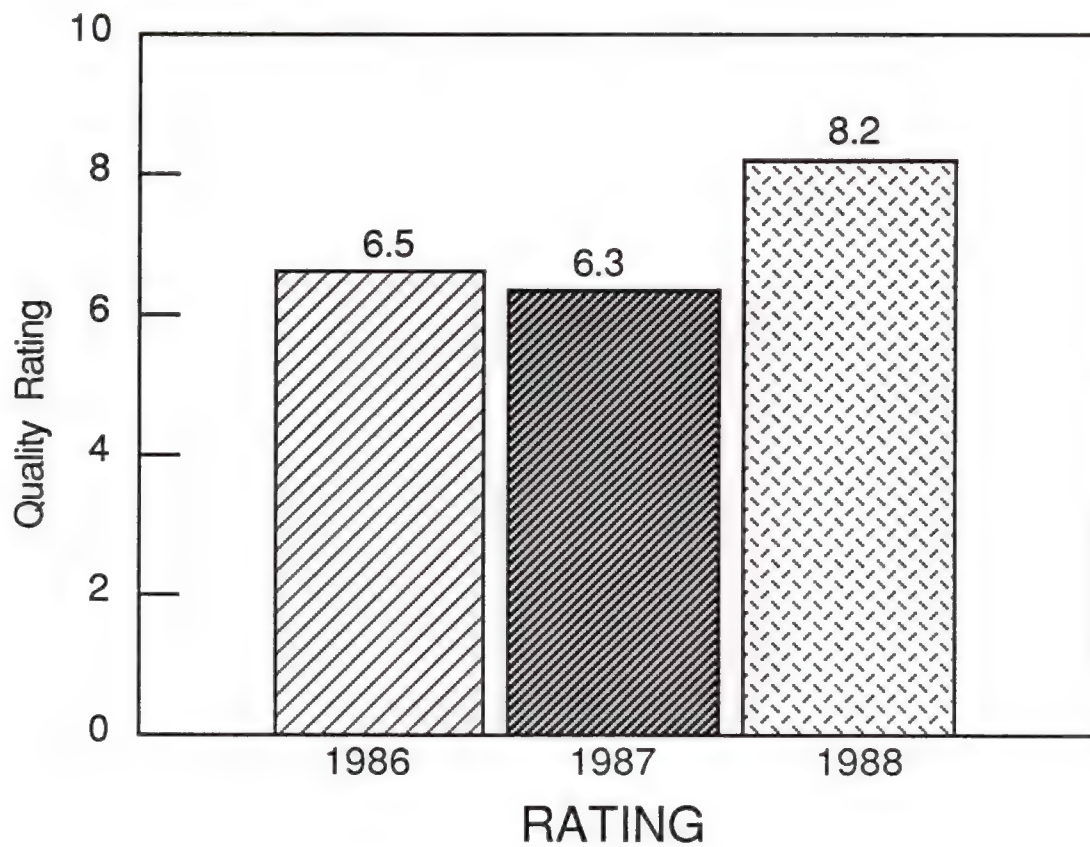
### Q12 E. F: CUSTOMER ENGINEER SKILL LEVEL RATINGS

CODE	MEAN	MIN	MAX	STD. DEV.	# CASES
ON-SITE-1988	8.7	6	10	1.2	81
ON-SITE-1987	8.3	4	10	1.4	56
ON-SITE-1986	8.3	5	10	1.1	37
FIELD-1988	8.8	5	10	1.2	74
REMOTE-1987	8.3	5	10	1.1	46
REMOTE-1986	8.6	7	10	0.9	23

INPUT



## DIAGNOSTICS PROCEDURES QUALITY



### Q11: PROBLEM DETECTION, ISOLATION AND RESOLUTION PROCESS\*

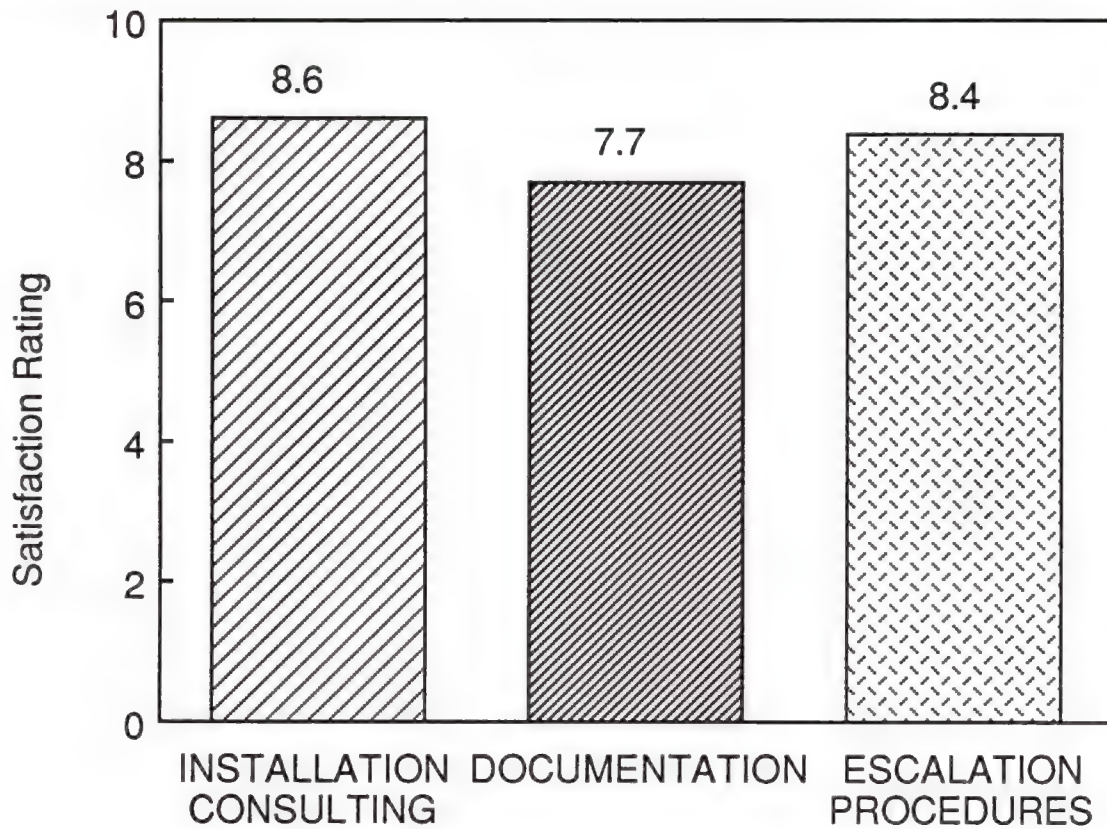
YEAR	MEAN	MIN	MAX	STD. DEV.	# CASES
1988	8.2	3	10	1.4	78
1987	6.3	1	10	2.3	43
1986	6.5	2	10	2.3	30

\*PREVIOUS QUESTION: QUALITY OF DIAGNOSTIC PROCEDURES

INPUT



## HARDWARE SUPPORT SERVICE SATISFACTION



### Q12A.B.D: HARDWARE SUPPORT SERVICES

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
INSTALL. CONSULT.—1988	8.6	2	10	1.7	78
DOCUMENTATION—1988	7.7	1	10	2.3	65
ESCALATION —1988 PROCEDURES	8.4	3	10	1.8	73

INPUT





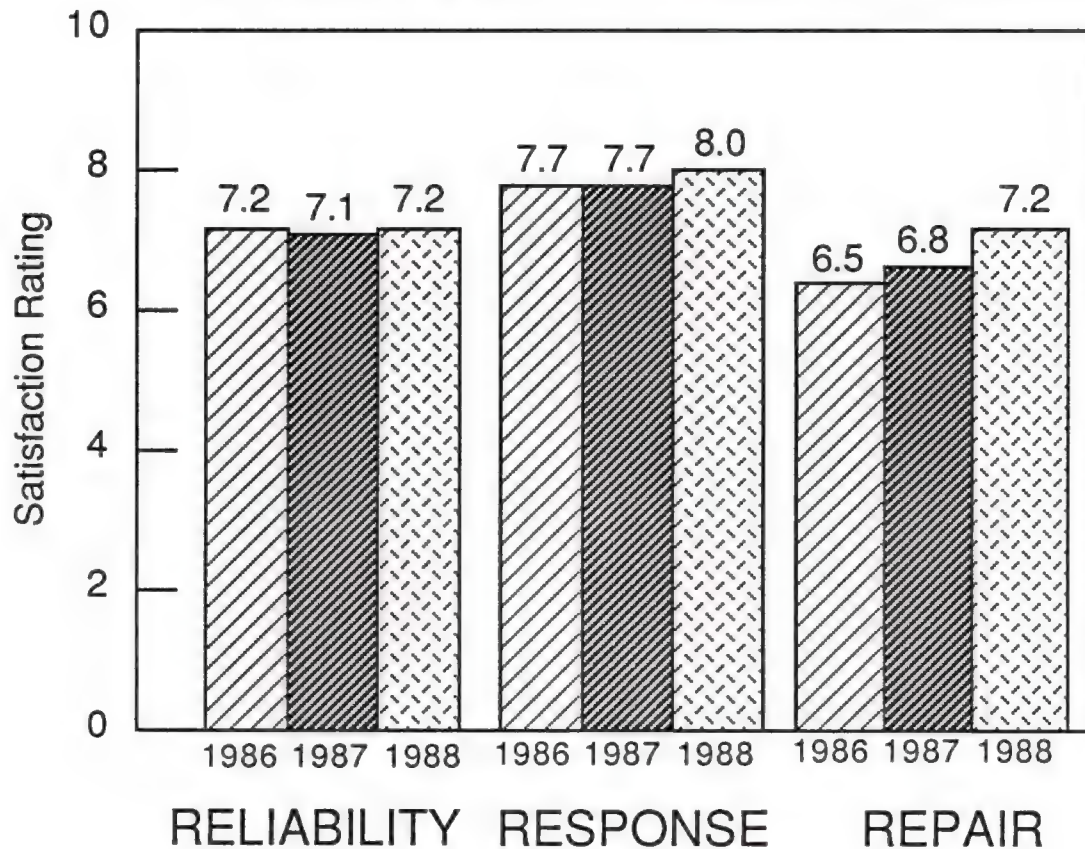


# **SOFTWARE RELIABILITY/SUPPORT**

INPUT



## SYSTEM SOFTWARE RELIABILITY, RESPONSE, REPAIR



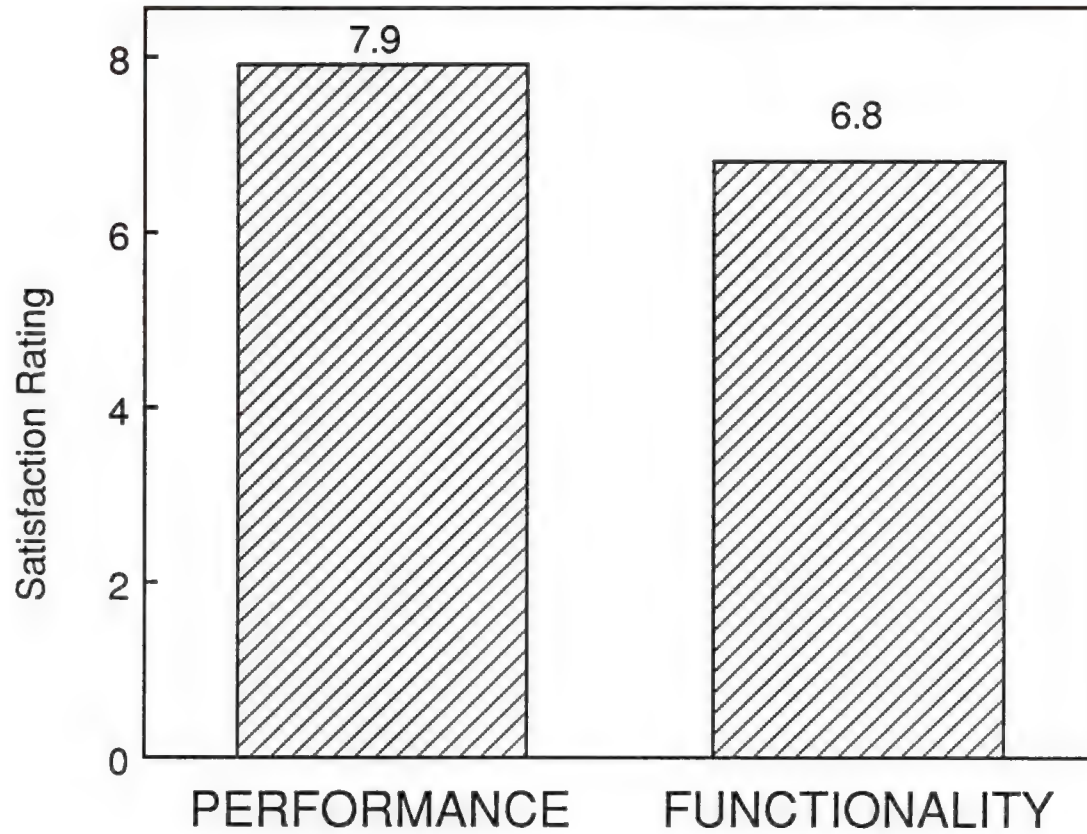
### 13A, 17A: SYSTEM SOFTWARE

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
RELIABILITY-1988	7.2	1	10	2.0	77
RELIABILITY-1987	7.1	2	9	1.8	41
RELIABILITY-1986	7.2	4	10	1.7	30
RESPONSE-1988	8.0	1	10	2.0	68
RESPONSE-1987	7.7	1	10	1.8	37
RESPONSE-1986	7.7	3	10	1.6	26
REPAIR-1988	7.2	2	10	2.1	68
REPAIR-1987	6.8	1	9	2.0	33
REPAIR-1986	6.5	3	9	1.5	26

INPUT



## SYSTEM SOFTWARE PERFORMANCE, FUNCTIONALITY



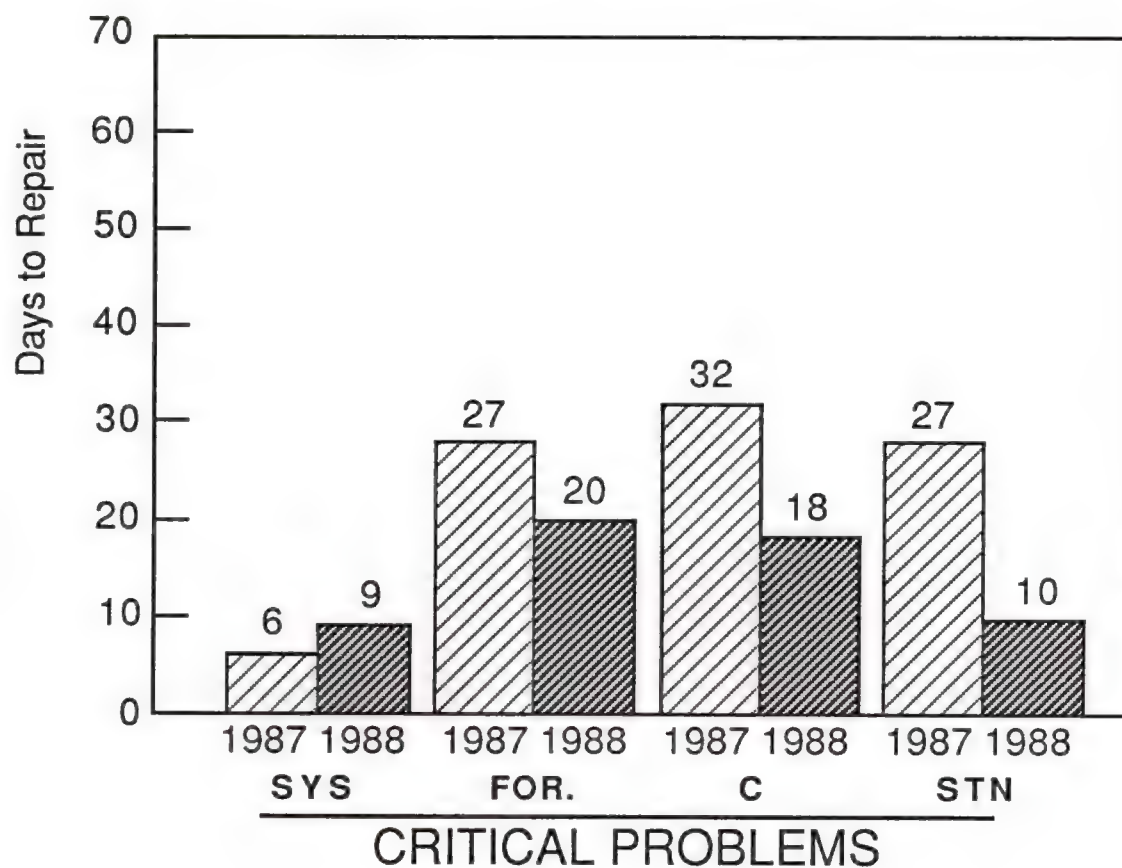
### Q13A: SYSTEM SOFTWARE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
PERFORMANCE—1988	7.9	5	10	1.2	77
FUNCTIONALITY—1988	6.8	2	10	1.5	76

INPUT



## SOFTWARE REPAIR TIME



### Q15 A. B. C: TIME TO REPAIR SYSTEMS SOFTWARE

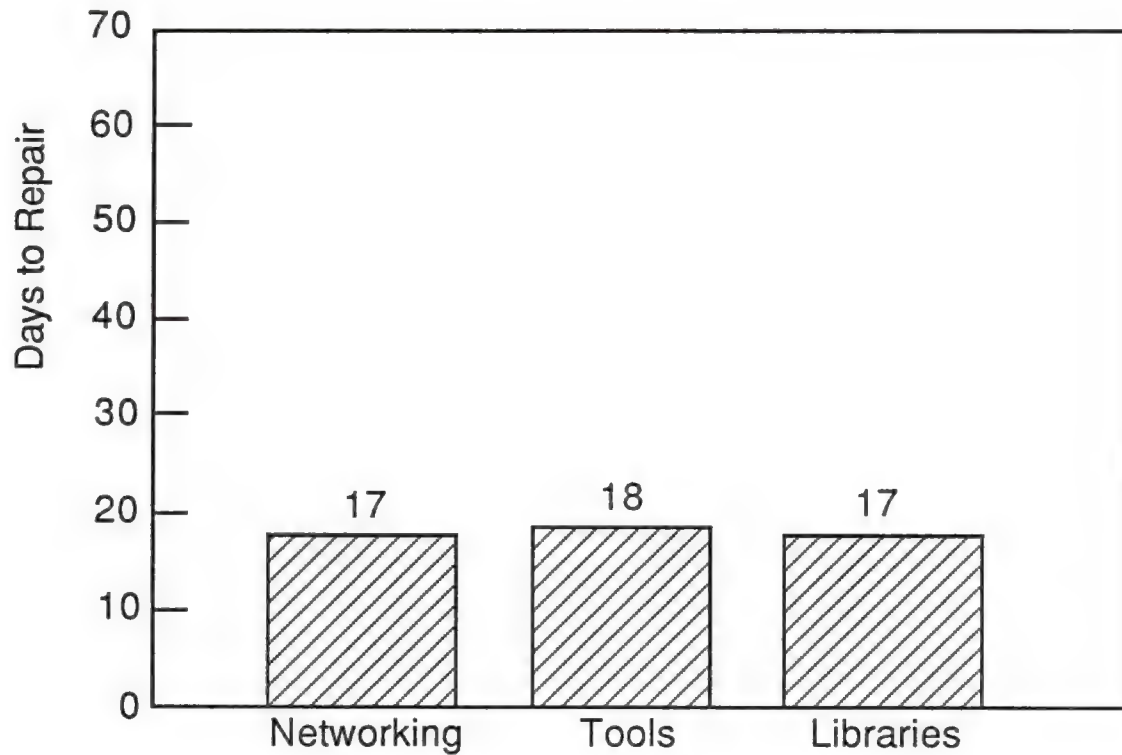
TYPE	MEAN	MIN	MAX	# CASES
<b>CRITICAL</b>				
SYSTEM - 1988	9	0	70	54
SYSTEM - 1987	6	1	30	20
FORTTRAN - 1988	20	0	168	55
FORTTRAN - 1987	27	1	180	28
C - 1988	18	0	112	26
C - 1987	32	1	120	5
STATION - 1988	10	0	56	39
STATION - 1987	27	1	180	19

INPUT





## SOFTWARE REPAIR TIME



## CRITICAL PROBLEMS

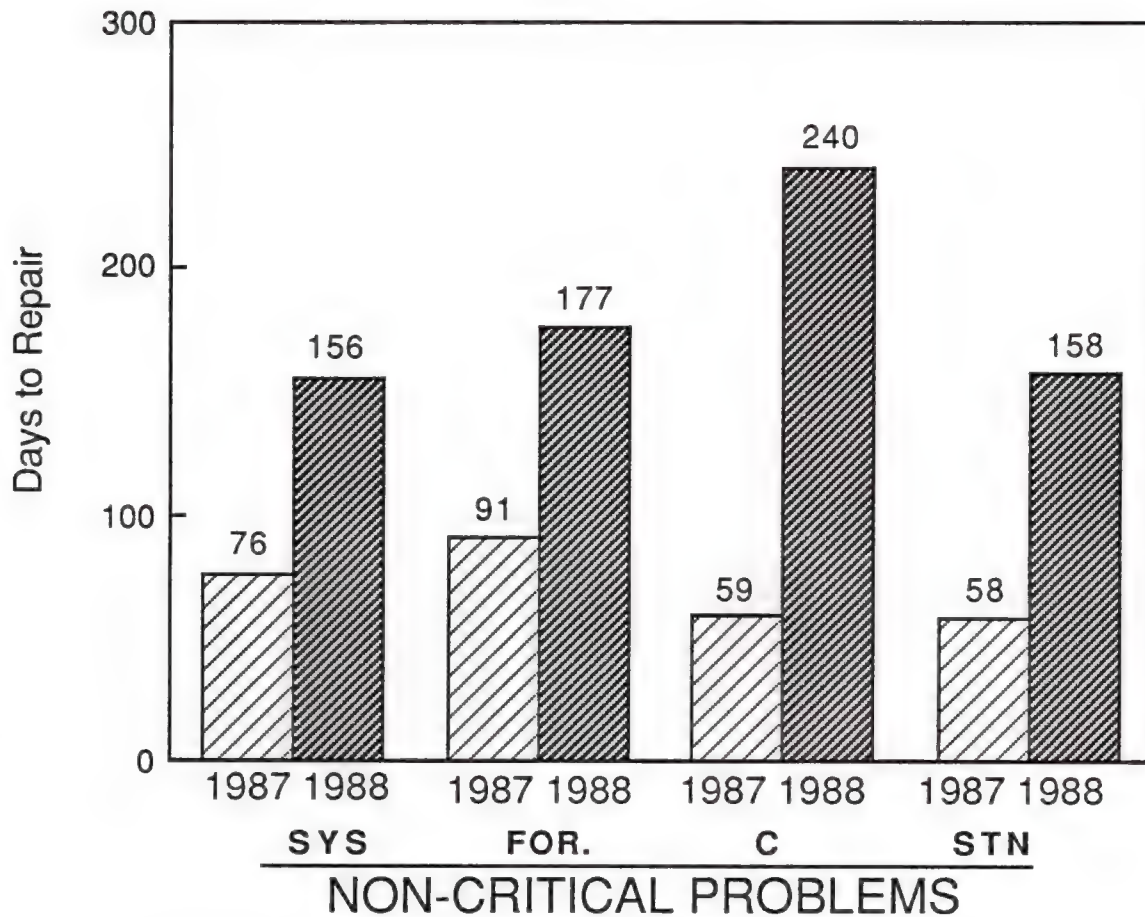
### Q15 D-F: TIME TO REPAIR SOFTWARE PROBLEMS

TYPE	MEAN	MIN	MAX	# CASES
NETWORKING - 1988	17	0	70	23
TOOLS/UTILITIES - 1988	18	0	168	36
LIBRARIES - 1988	17	0	112	42

INPUT



## SOFTWARE REPAIR TIME



### Q15 A. B. C: TIME TO REPAIR SYSTEMS SOFTWARE\*

TYPE	MEAN	MIN	MAX	#CASES
<b>NON-CRITICAL</b>				
SYSTEM - 1988	156	1	540	51
SYSTEM - 1987	76	1	365	26
FORTTRAN - 1988	177	1	540	45
FORTTRAN - 1987	91	1	365	34
C - 1988	240	1	540	19
C - 1987	59	1	180	8
STATION - 1988	158	1	540	37
STATION - 1987	58	1	180	19

\* Similar responses for Networking, Tools, and Libraries

INPUT



## **SOFTWARE RESPONSE TIME (Q14)**

- General Difficulty in Responding to Question.
- Customers Consider Analyst "Part of the Team."
- Response Time for Critical Problems Generally Ranged From:
  - No Time to Respond, to
  - Maybe 5 Min.
- They Generally Consider Response Time to Be Consistent with Their Own Staff.
- Response Time for 'Non-Critical' Also Posed a Problem.
  - When Detected, Problem Category Is Not Known.
  - Analyst Makes Necessary Fix.
  - Remaining Problems Fall into Category of 'Time to Resolve.'

INPUT



## **GENERAL COMMENTS SOFTWARE PROBLEM RESOLUTION**

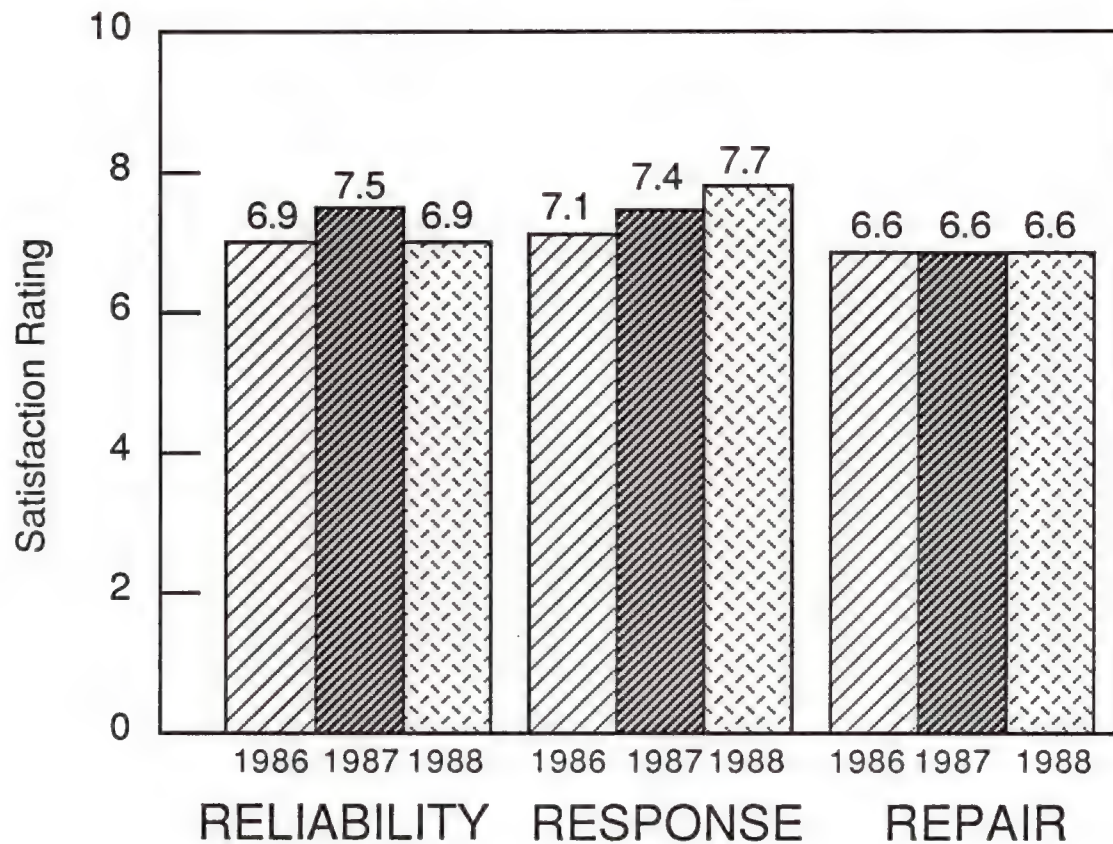
- Several Common Themes
  - Local Support Is Good to Excellent
  - Local Analysts Frequently Do Not Have Latest Information
  - Successful Interaction with Headquarters Depends on Analysts' Contacts

INPUT





## FORTRAN RATINGS RELIABILITY, RESPONSE, REPAIR



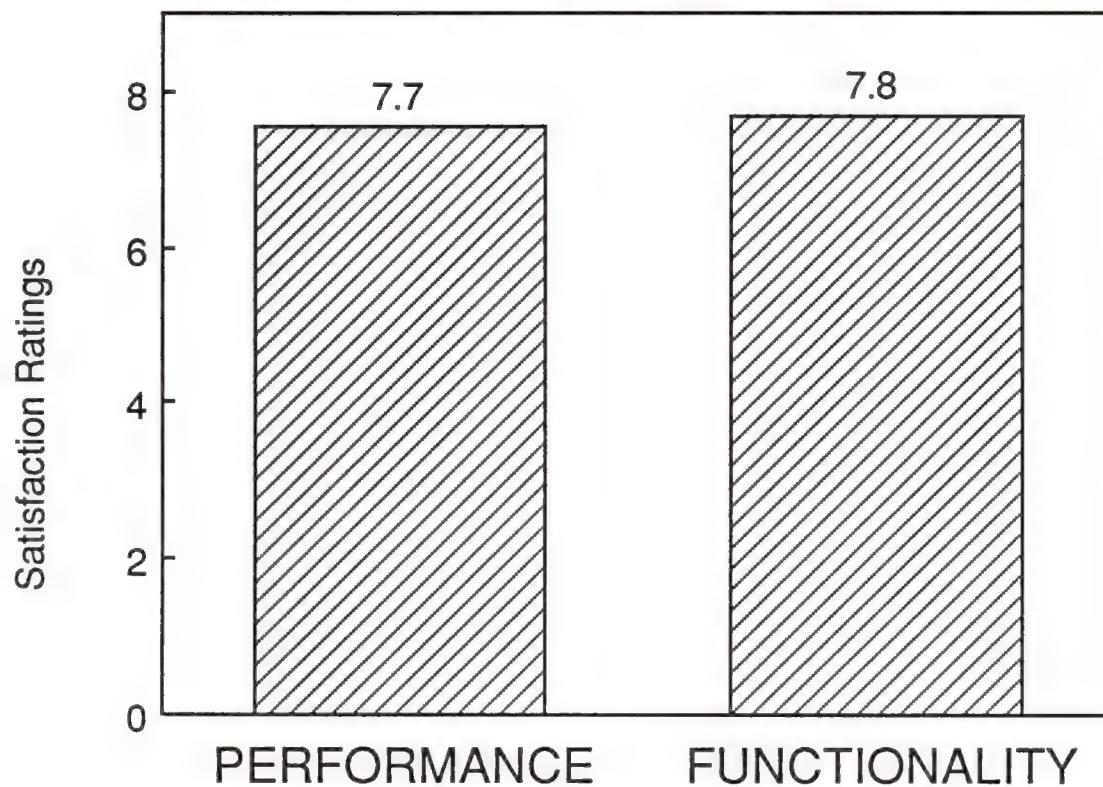
13B. 17B: FORTRAN RATINGS

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
RELIABILITY-1988	6.9	3	10	1.7	80
RELIABILITY-1987	7.5	3	10	1.6	52
RELIABILITY-1986	6.9	2	10	1.8	32
RESPONSE-1988	7.7	1	10	1.9	65
RESPONSE-1987	7.4	1	10	1.9	47
RESPONSE-1986	7.1	2	10	2.0	24
REPAIR-1988	6.6	1	10	2.0	66
REPAIR-1987	6.6	1	10	2.2	46
REPAIR-1986	6.6	2	9	1.8	25

INPUT



## FORTRAN RATINGS PERFORMANCE, FUNCTIONALITY



Q 13B: FORTRAN RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
PERFORMANCE—1988	7.7	3	10	1.5	79
FUNCTIONALITY—1988	7.8	3	10	1.4	78

INPUT



## **EXAMPLES OF FORTRAN COMMENTS**

- Several User Programs Resulted in Incorrect Code Generation (106)
- Infinite Loop in Compiler Caused Compiler to Grow to Point where We Had to Take Down System. Three Weeks to Resolve
- No Fortran Support (156)

INPUT



## EXAMPLES OF FORTRAN COMMENTS

- Time to Fix
  - Fortran Problems Take Six Months to Resolve (168)
  - Some Bugs Are Not Resolved until Several Releases Down the Line (138)
  - Resolution of Fortran Problems Is an Ongoing Problem (169)
- Local Fortran Support
  - Numerous Positive Comments Concerning Fast Development of Fortran Workarounds by Local Analysts
  - Local Skills Need Improvement. Need Improvement with Priority Setting (144)

INPUT





## EXAMPLES OF FORTRAN COMMENTS

- On-Site Response Is Good, but Once It Leaves Site, Response Is Extremely Slow (125)
- It Appears that No One Is Interested in Fortran Problems (131)
- Local People Could Use More Corporate Help (135)
- CFT 1.14 Has No Support (156)
- Excellent Local Support, but People Seem to Have to Fight the Corporate Group (166)
- No Perceived Support from Corporate (172)

INPUT



## **EXAMPLES OF OPERATING SYSTEM COMMENTS**

- Local Site Support Personnel Are Seldom at Our Site (102)
- No Signs of Corporate Technical Support Here (104)
- Cray Listens to Us, But Doesn't Implement Many Items We Really Want (117)
- Good Support on a Saturday (107)
- Many Problems Continue to Exist for Years (123)
- Corporate Very Good at Critical Problems, but Very Slow at Non-Critical. Too Slow (130)
- COS Seems To Be a Dead System with Regards to Maintenance (158)

INPUT



## **EXAMPLES OF OPERATING SYSTEM COMMENTS**

- Local Site Analysts Are Frequently Not Knowledgeable about Extensive Local Modifications (202)
- Inexperienced Local Site Staff
- We Were First Installation of UNICOS 2.1. There Were Lots of Bugs. Release Was Too Early (114)
- Prior to Release 3.0, UNICOS Was Unreliable. 3.0 Is Much Improved. (159)

INPUT



## **EXAMPLES OF OPERATING SYSTEM COMMENTS**

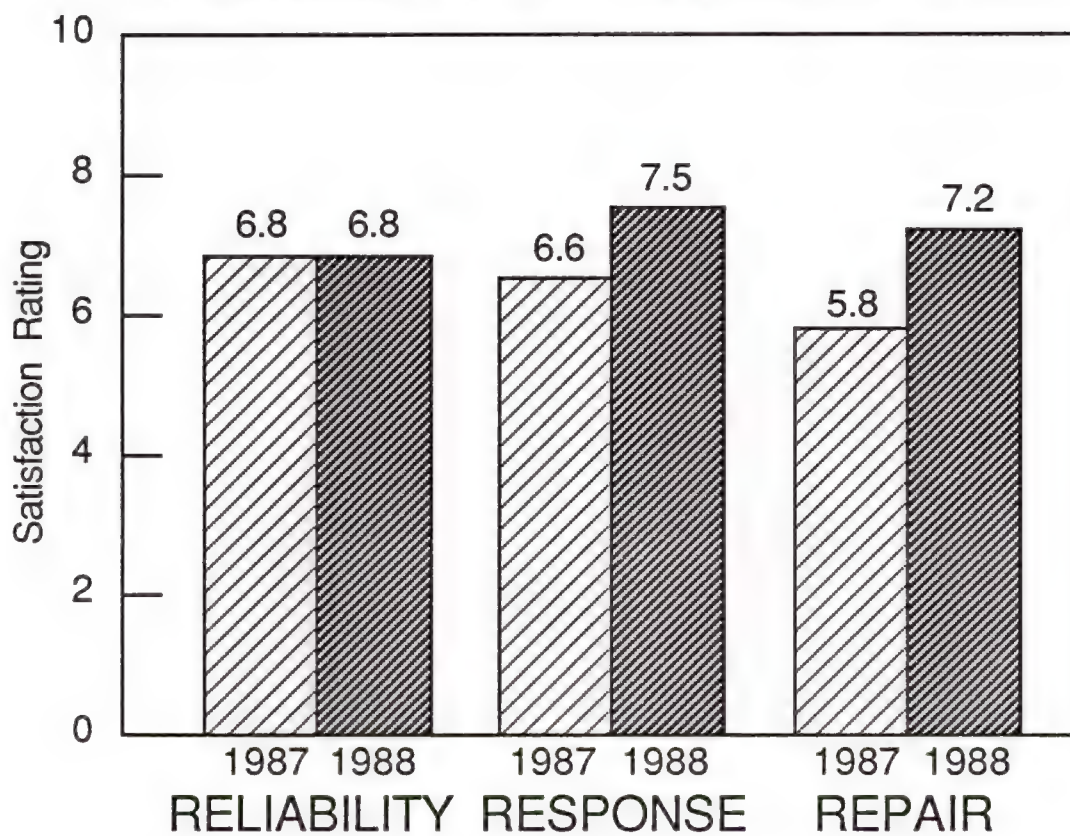
- Very Little Testing Is Done on Software Prior to Release (102)
- Released Software Is Very Poor. Requires Many Mods that Are Not Necessarily Reliable (104)
- UNICOS Software Performs Adequately, but Is Lacking in Functionality (128)
- UNICOS Is Very Immature System. Lacks Rudimentary System Management and Security Feature (132)
- Operating System Lacks Operation Commands (144)
- General Lack of Features, Particularly System File Directories (149)

INPUT





## "C" RATINGS RELIABILITY, RESPONSE, REPAIR



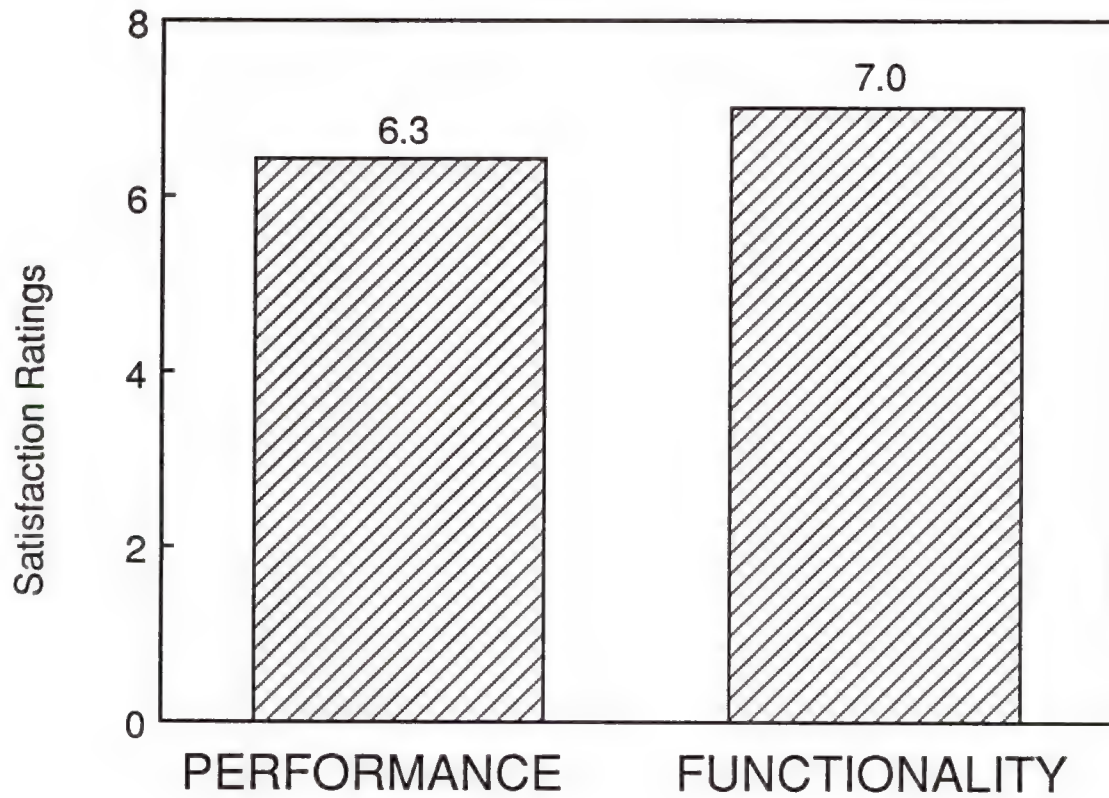
### Q13B. 17B: "C" RATINGS

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
RELIABILITY-1988	6.8	1	10	2.5	25
RELIABILITY-1987	6.8	2	10	2.6	13
RESPONSE-1988	7.5	1	10	2.3	25
RESPONSE-1987	6.6	1	10	2.9	13
REPAIR-1988	7.2	3	10	1.6	21
REPAIR-1987	5.8	1	10	2.9	11

INPUT



## 'C' RATINGS PERFORMANCE, FUNCTIONALITY



### Q13B: "C" RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
PERFORMANCE—1988	6.3	1	9	2.1	26
FUNCTIONALITY—1988	7.0	2	10	2.0	25

INPUT



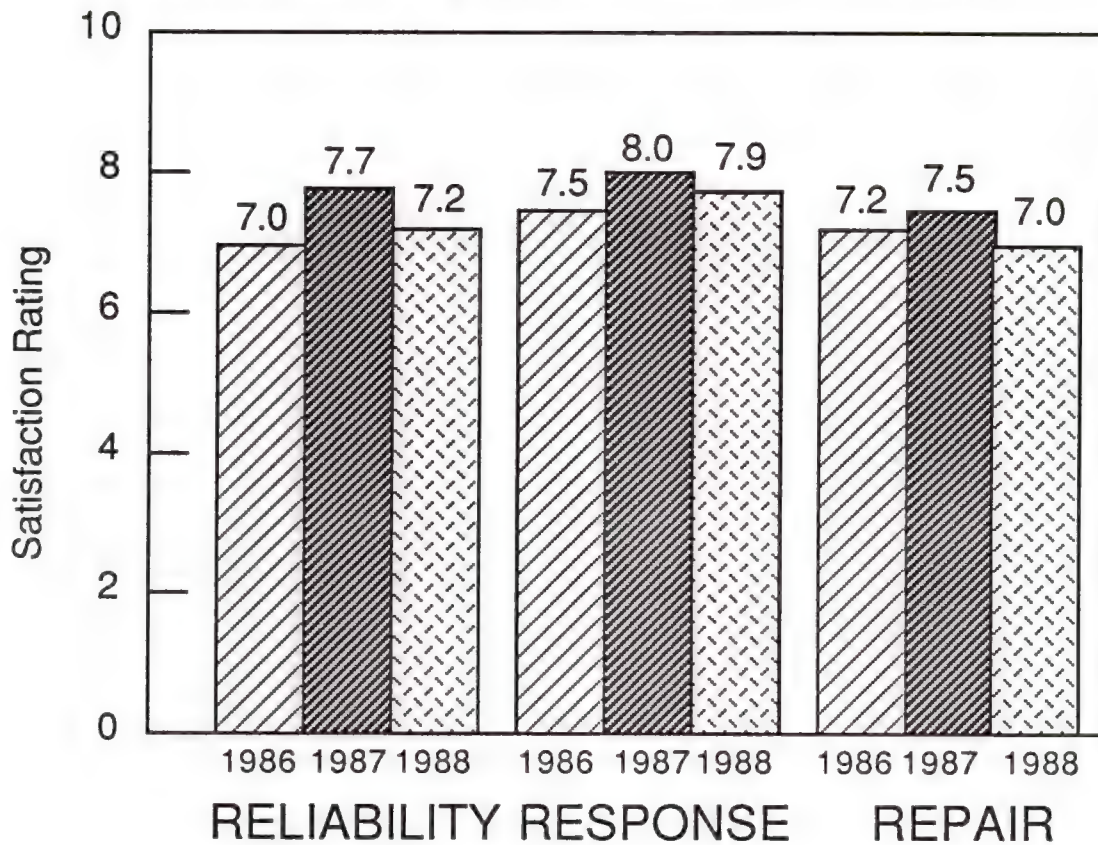
## EXAMPLES OF "C" COMMENTS

- "C" Compiler Is Useless—Too Slow (141)
- "C" Compiler Was Weak at First. Shows Improvement (110)
- "C" Compiler Is Slower than Fortran (143)
- Cray Is Very Late and Slow Providing Proper "C" Compiler. We Provided Our Own (150)
- Too Many Bugs (203)

INPUT



## STATION RATINGS RELIABILITY, RESPONSE, REPAIR



### Q13C, 17C: STATION RATINGS

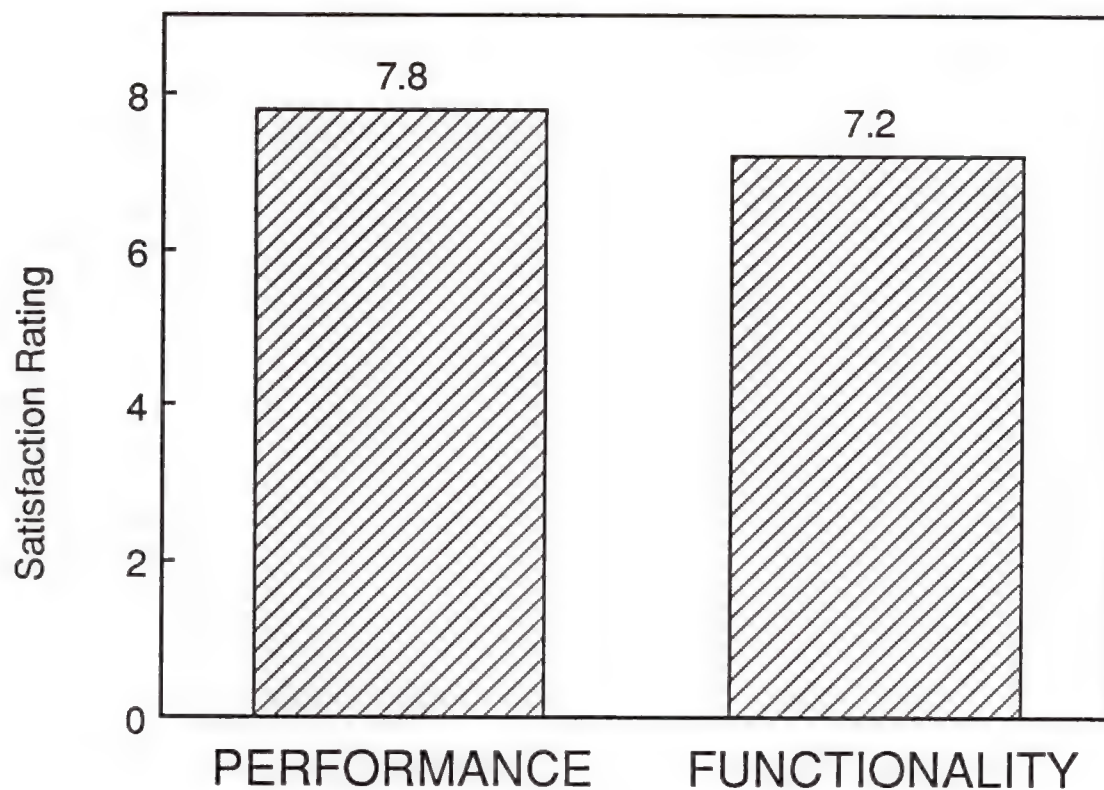
	MEAN	MIN	MAX	STD. DEV	# CASES
RELIABILITY-1988	7.2	3	10	1.7	65
RELIABILITY-1987	7.7	4	10	1.4	33
RELIABILITY-1986	7.0	4	9	1.5	23
RESPONSE-1988	7.9	2	10	1.8	54
RESPONSE-1987	8.0	3	10	1.3	28
RESPONSE-1986	7.5	3	10	1.8	20
REPAIR-1988	7.0	2	10	2.1	54
REPAIR-1987	7.5	3	10	1.7	26
REPAIR-1986	7.2	3	10	1.6	22

INPUT





## STATION RATINGS PERFORMANCE, FUNCTIONALITY



### Q13C: STATION RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
PERFORMANCE—1988	7.8	5	10	1.3	65
FUNCTIONALITY—1988	7.2	2	10	1.6	65

INPUT



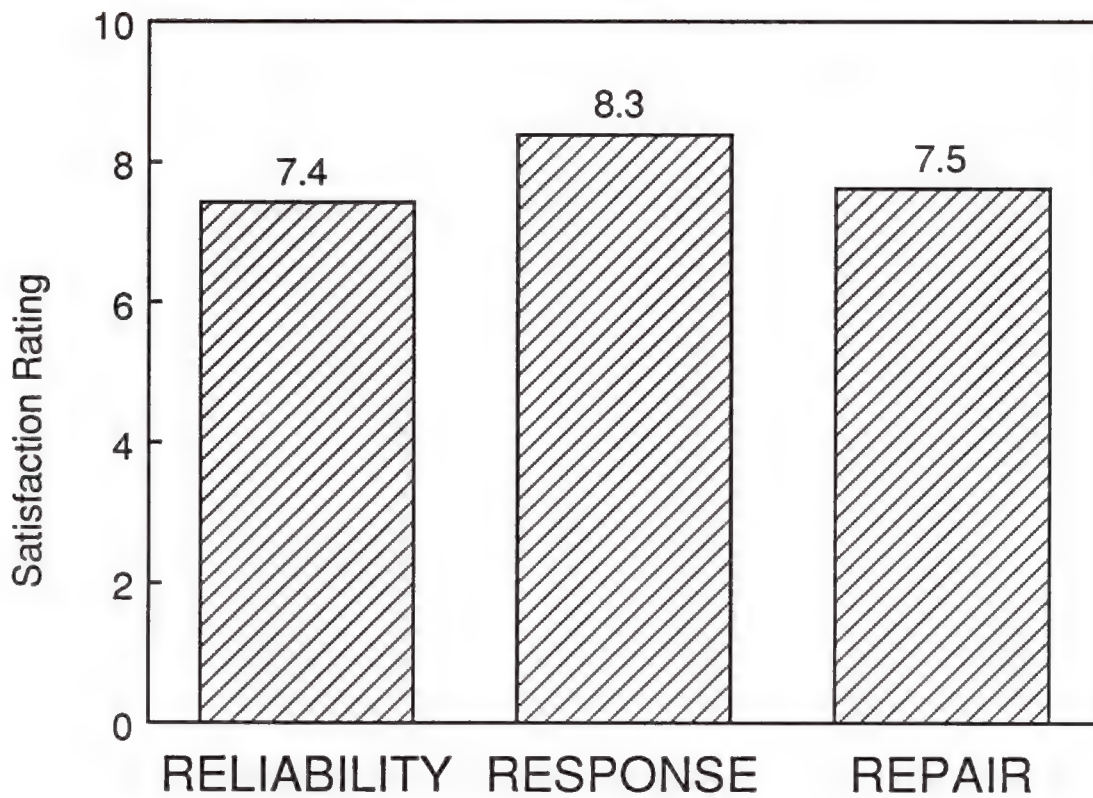
## EXAMPLES OF STATION COMMENTS

- We've Had to Dedicate Too Much Time to Keep It Running. Have to Make Big Changes to Make It Operate (113)
- VAX Station Software for UNICOS Has Many Bugs. Supplemented TCP/IP through Sun Gateway to Meet Need (142)
- Station Software Breaks a Lot. No Trace Available (161)
- Station Software Seems to Be Low Cray Priority (110)
- VAX Station Is Unstable (132)
- System Disappears during Execution. Currently Only Three Stations (173)

INPUT



## NETWORKING SOFTWARE RELIABILITY, RESPONSE, REPAIR



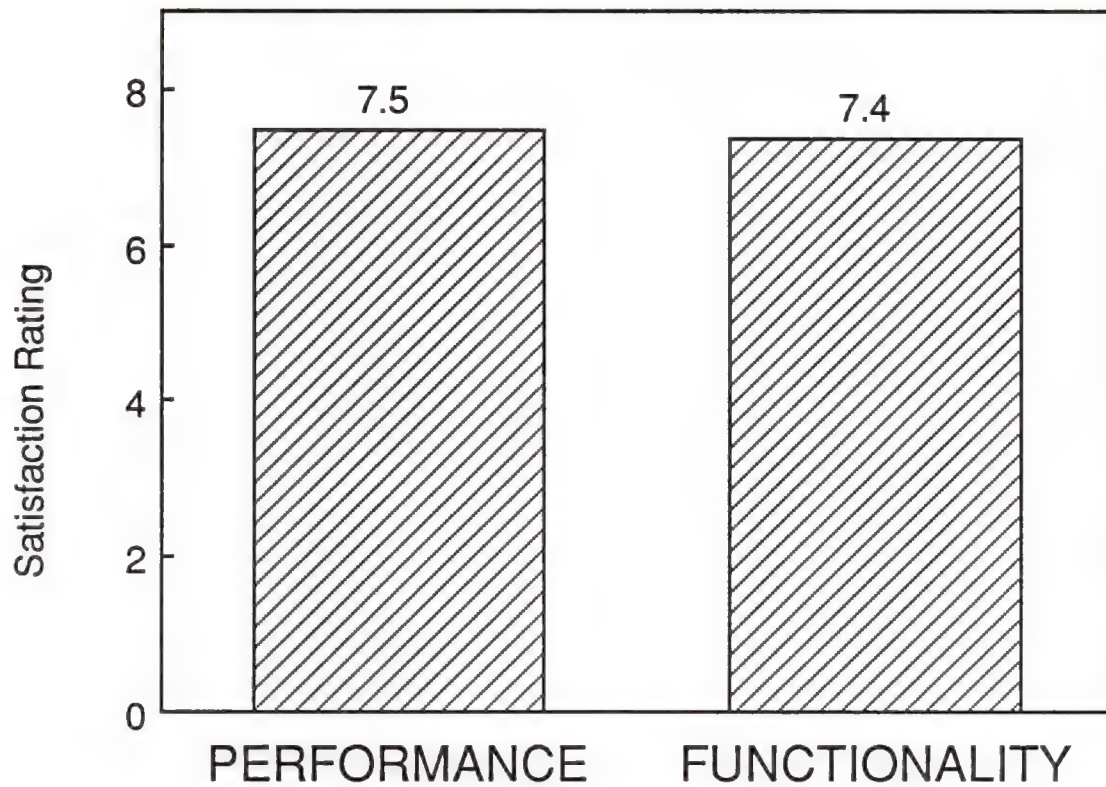
Q13D, 17D: NETWORKING SOFTWARE RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RELIABILITY—1988	7.4	3	10	1.9	25
RESPONSE—1988	8.3	5	10	1.5	26
REPAIR—1988	7.5	5	10	1.5	25

INPUT



## NETWORKING SOFTWARE PERFORMANCE, FUNCTIONALITY



Q13.17: NETWORKING RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
PERFORMANCE—1988	7.5	4	10	1.4	26
FUNCTIONALITY—1988	7.4	4	10	1.5	25

INPUT





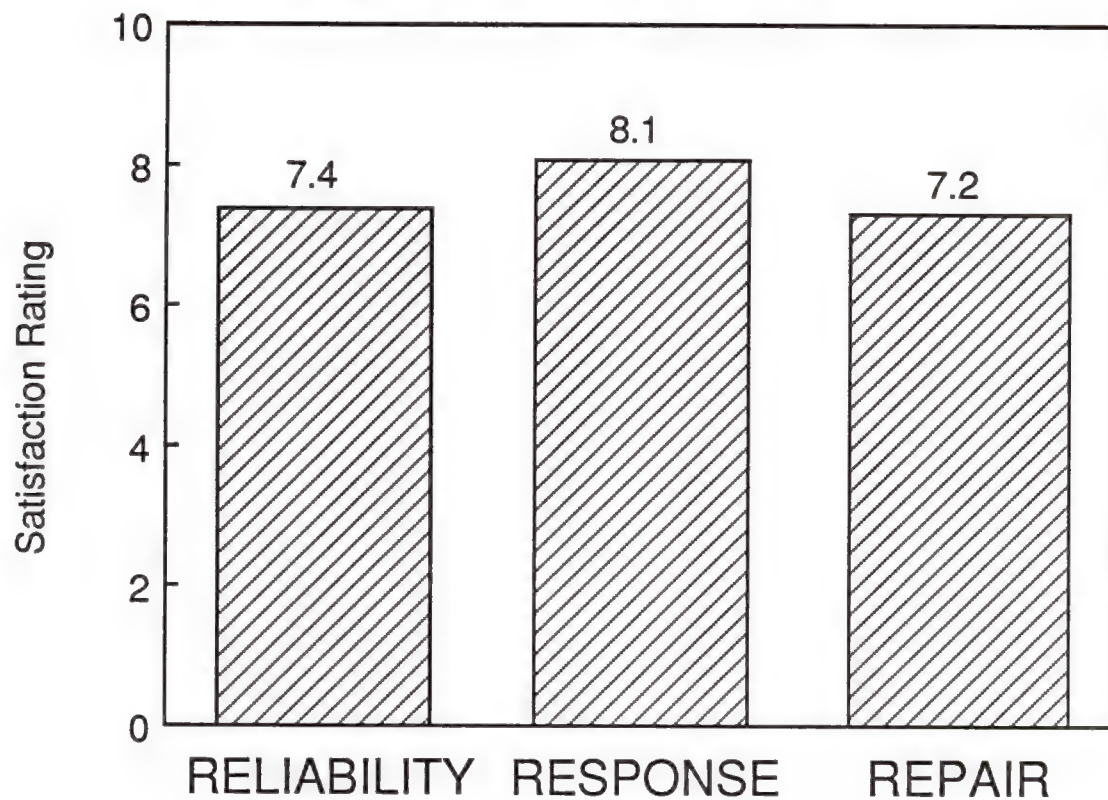
## **EXAMPLES OF NETWORKING SOFTWARE COMMENTS**

- Trying for Seven Months. Too Many Bugs. Not a Mature Product (158)
- Have Been Trying to Get It Working for 6–8 weeks. Software Configuration Problem (104)
- When It Works, Okay. Flexibility, Functionality Suffer (105)
- Core Hog Due to Buffers Being Allocated Dynamically (107)
- Too Much Trouble of Hanging for USCP (209)

INPUT



# **TOOLS/UTILITY RATING** **RELIABILITY, RESPONSE, REPAIR**



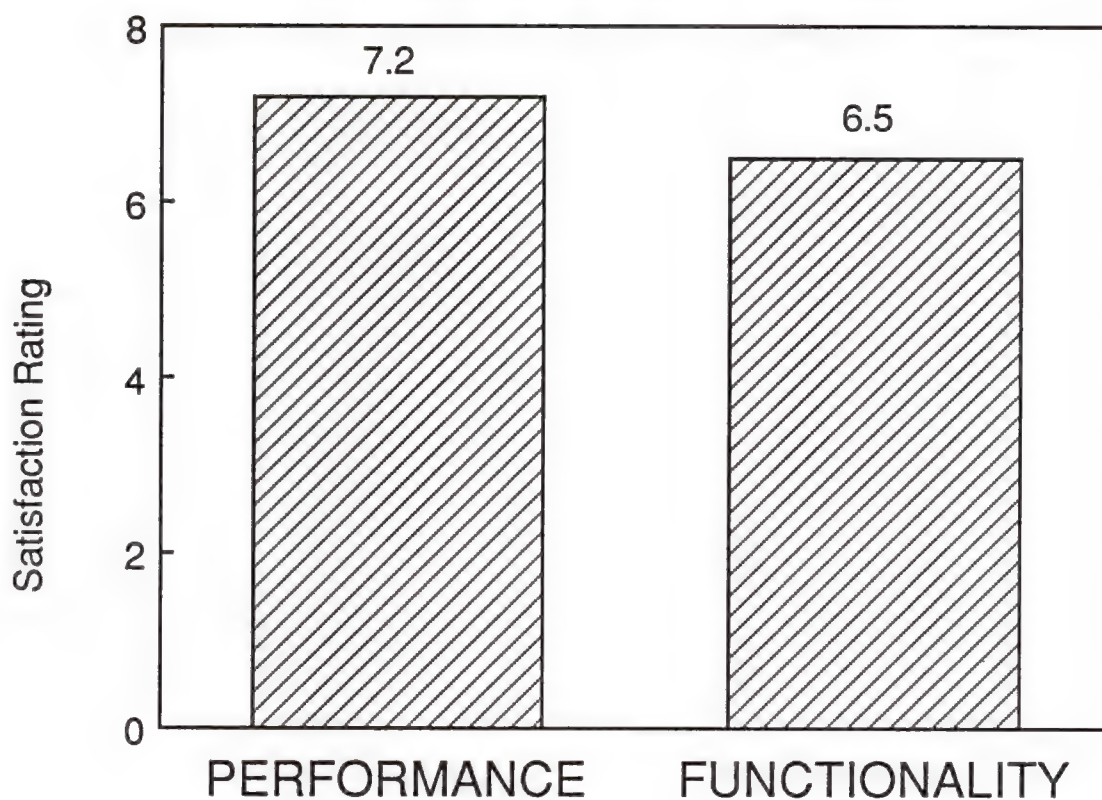
Q13E.17E: TOOLS/UTILITIES RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RELIABILITY—1988	7.4	1	10	1.8	62
RESPONSE—1988	8.1	5	10	1.4	51
REPAIR—1988	7.2	3	10	1.7	48

INPUT



## TOOLS/UTILITIES RATING PERFORMANCE, FUNCTIONALITY



### Q13E: TOOLS/UTILITIES RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
PERFORMANCE—1988	7.2	1	10	1.8	62
FUNCTIONALITY—1988	6.5	1	10	2.0	63

INPUT



## EXAMPLES OF TOOLS/UTILITIES COMMENTS

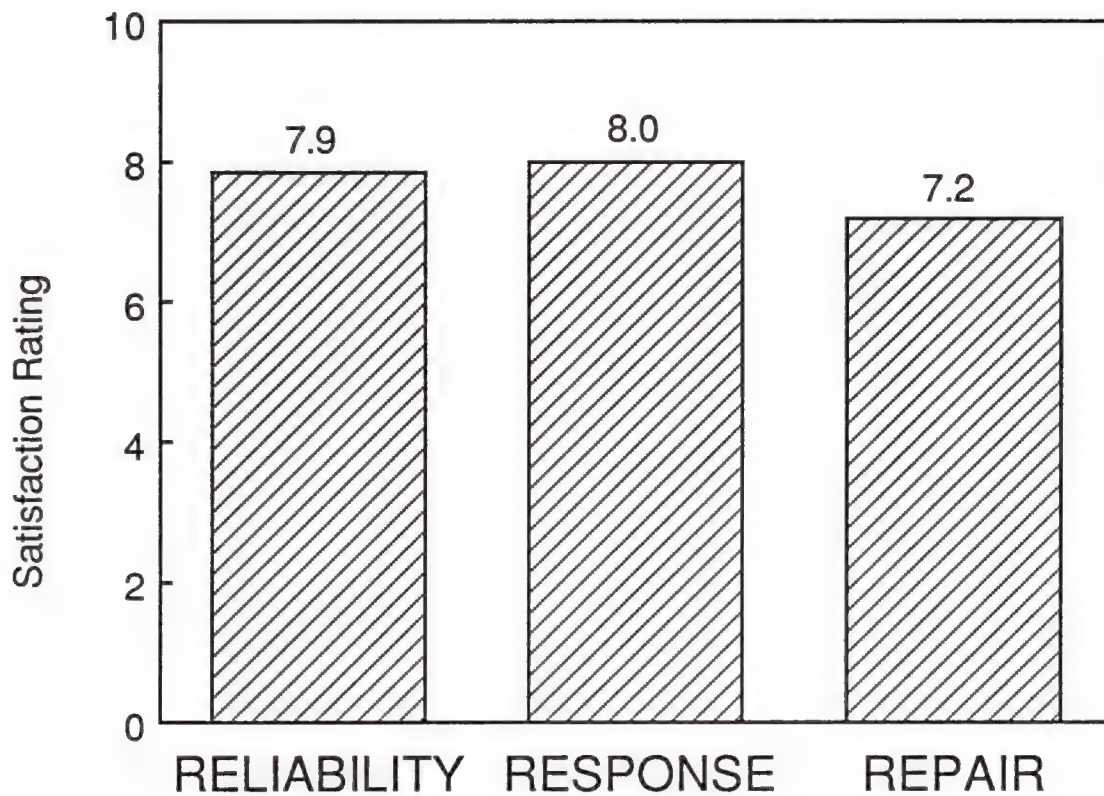
- Debuggers Are Buggy. Too Many Debuggers. UNICOS Performance Tools Buggy (107)
- Seriously Lacking in Standard Performance Reports (108)
- Debugger Is Not User Friendly (154)
- Tools/Utilities Are Not Complete Yet (206)
- Debuggers Absolutely Rotten (103)
- Non-Existent Performance Tools. Debuggers Inefficient to Use (116)
- Poor Debuggers. Both Fortran and "C" Debuggers Stink under UNICOS.

INPUT





# LIBRARIES RATING RELIABILITY, RESPONSE, REPAIR



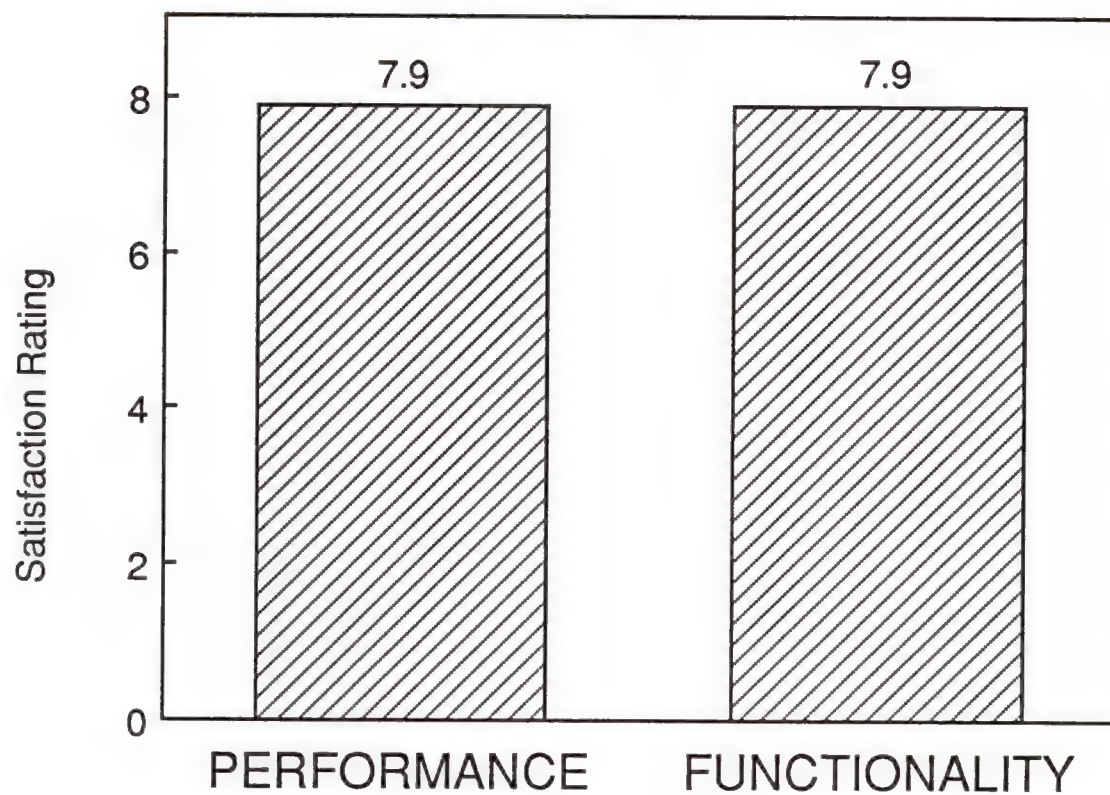
Q13F.17F: LIBRARIES RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RELIABILITY—1988	7.9	3	10	1.5	68
RESPONSE—1988	8.0	4	10	1.5	53
REPAIR—1988	7.2	4	10	1.6	51

INPUT



## LIBRARIES RATING PERFORMANCE, FUNCTIONALITY



### Q13F: LIBRARIES RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
PERFORMANCE—1988	7.9	3	10	1.4	67
FUNCTIONALITY—1988	7.9	3	10	1.5	67

INPUT



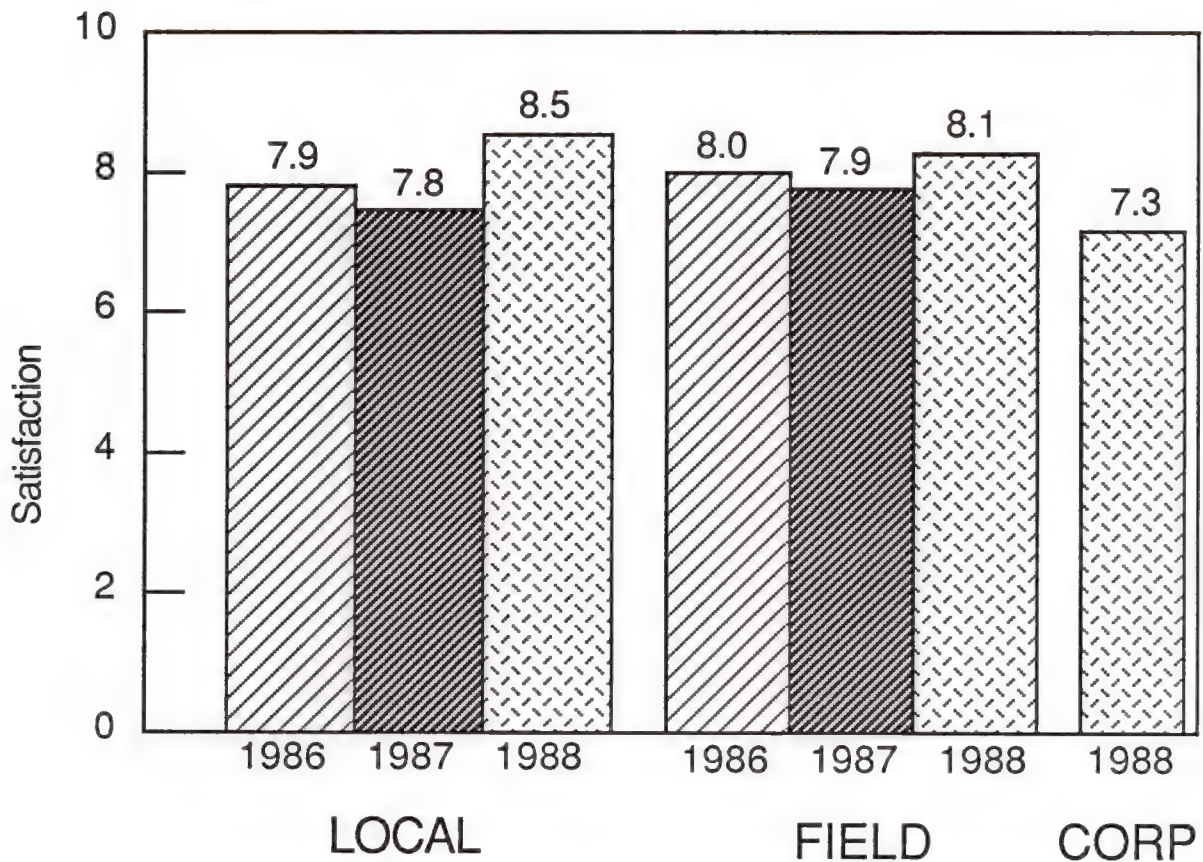
## EXAMPLES OF LIBRARIES COMMENTS

- Foreign Dateset Conversion Routines Continue to Be Bug-Ridden. Later Releases Not as Functional as Earlier Ones (151)
- LIBF Many Problems and Slow (159)
- Many Bugs in I/O Libraries. COS/UNICOS Inconsistencies such as File Structures (116)
- Releases Not Consistent (125)

INPUT



## SOFTWARE SUPPORT RATING\* (OPERATING SYSTEM)



Q18: SOFTWARE SUPPORT RATING RE: OP. SYS.

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
LOCAL-1988	8.5	3	10	1.7	74
LOCAL-1987	7.8	2	10	1.7	41
LOCAL-1986	7.9	4	10	1.6	28
FIELD-1988	8.1	4	10	1.4	46
FIELD-1987	7.9	4	10	1.5	35
FIELD-1986	8.0	5	10	1.4	21
CORP-1988	7.3	3	10	2.0	44

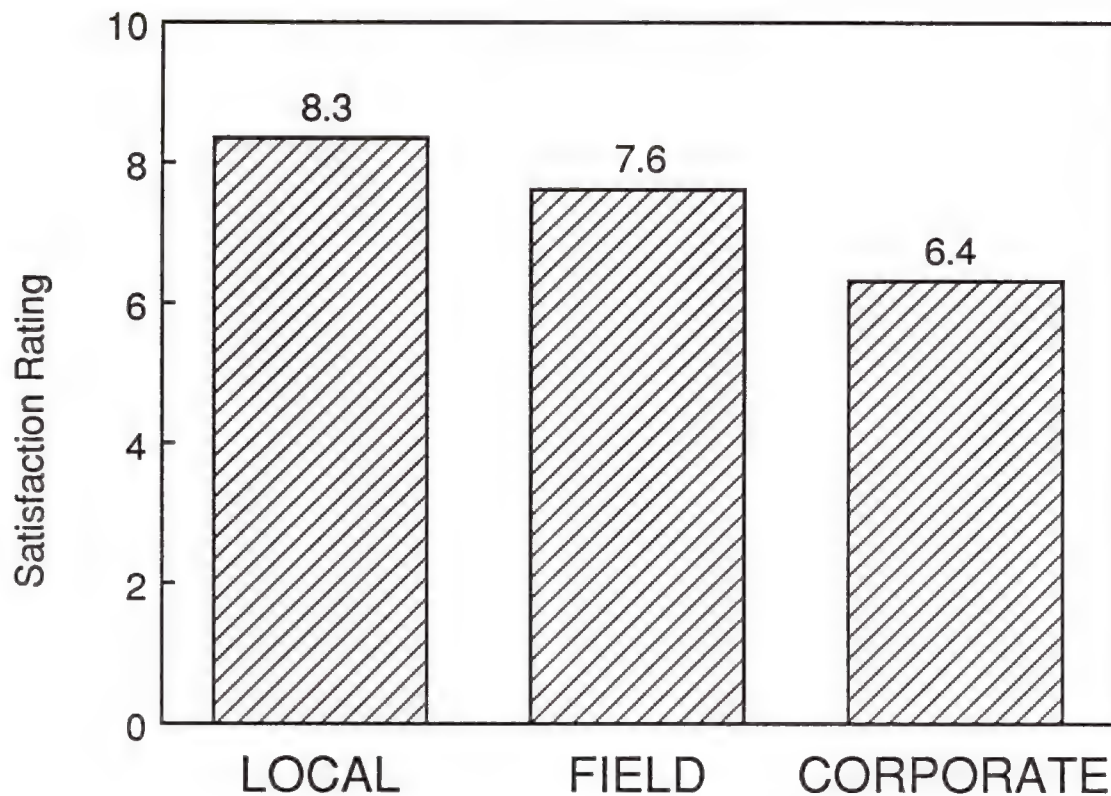
\* 1987 - was Software Analyst Rating

INPUT





## SOFTWARE SUPPORT RATING (FORTRAN)



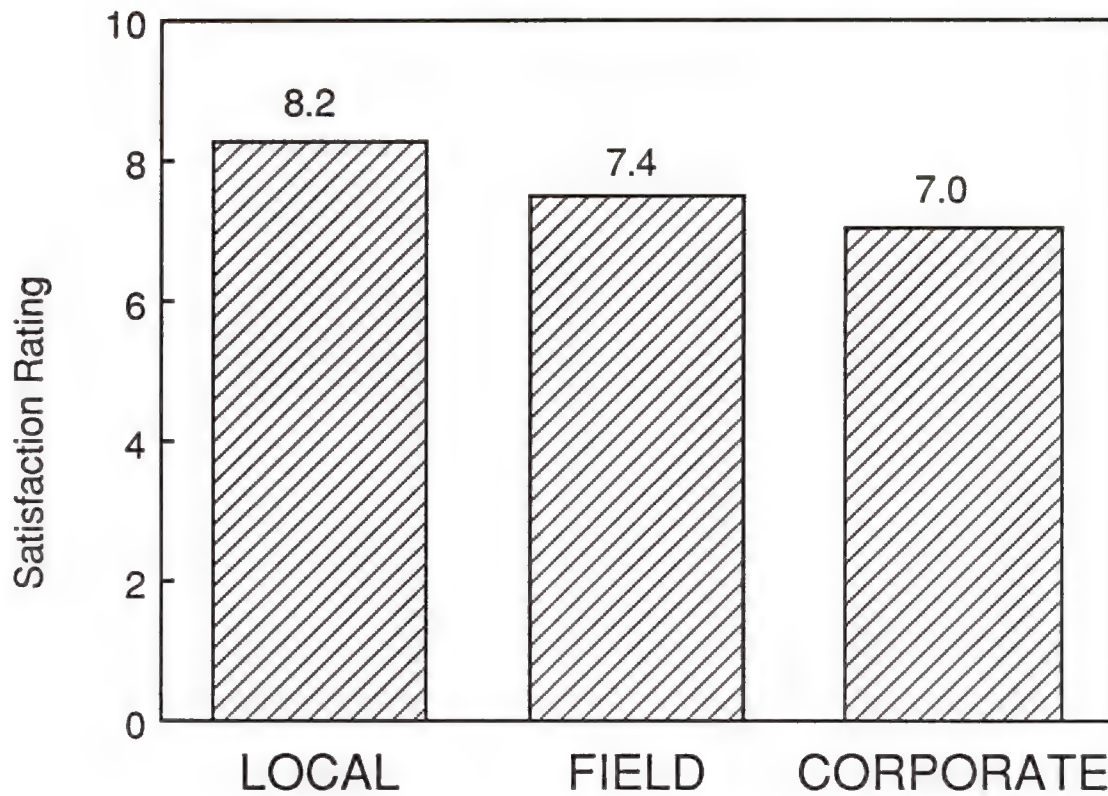
Q18: SOFTWARE SUPPORT RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
LOCAL—1988	8.3	3	10	1.8	71
FIELD—1988	7.6	3	10	1.6	45
CORPORATE—1988	6.4	2	10	2.0	43

INPUT



## SOFTWARE SUPPORT RATING (C)



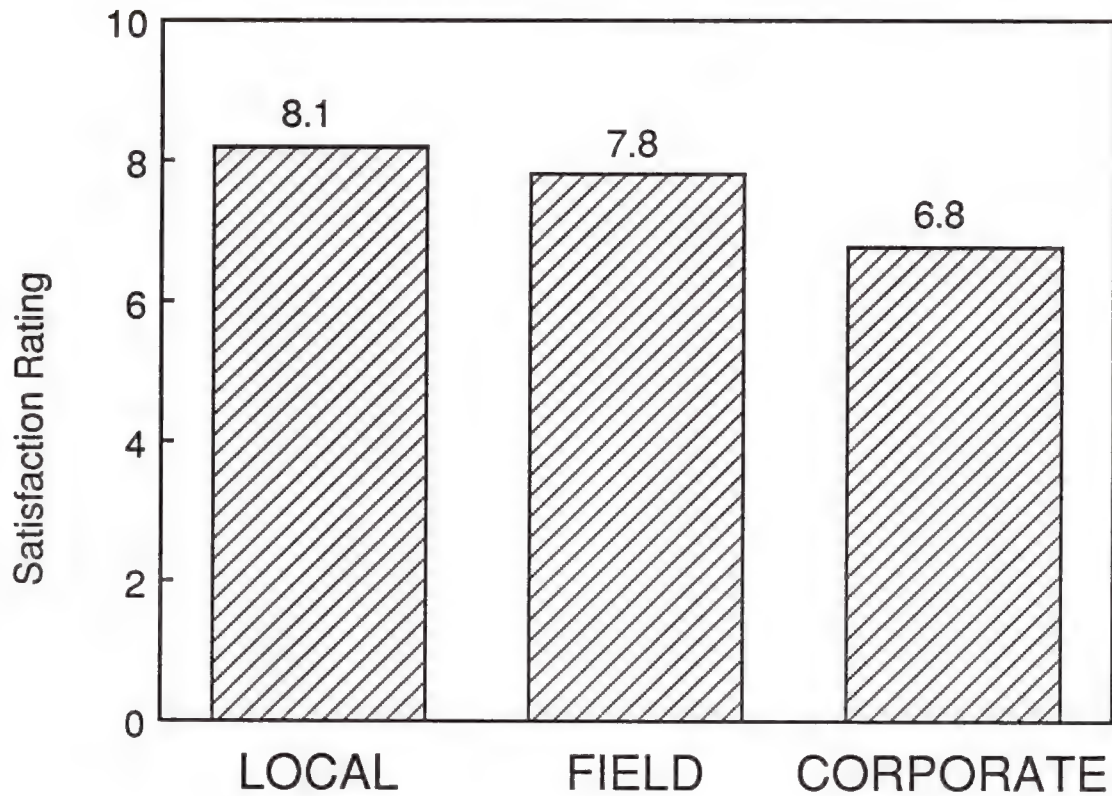
### Q18: SOFTWARE SUPPORT RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
LOCAL—1988	8.2	1	10	2.1	29
FIELD—1988	7.2	3	10	1.9	21
CORPORATE—1988	6.8	3	10	2.2	19

INPUT



## SOFTWARE SUPPORT RATING (STATION SOFTWARE)



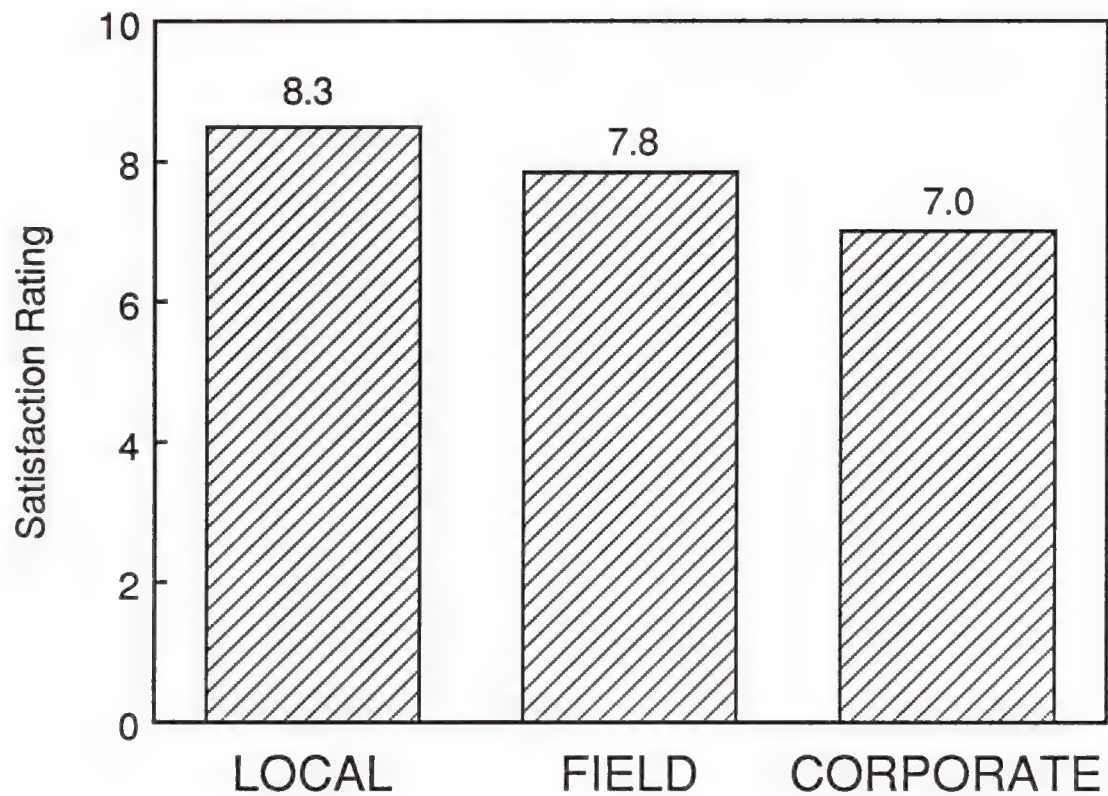
Q18: SOFTWARE SUPPORT RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
LOCAL—1988	8.1	1	10	2.2	54
FIELD—1988	7.8	2	10	1.7	45
CORPORATE—1988	6.8	2	10	2.2	32

INPUT



## SOFTWARE SUPPORT RATING (NETWORKING SOFTWARE)



### Q18: SOFTWARE SUPPORT RATING

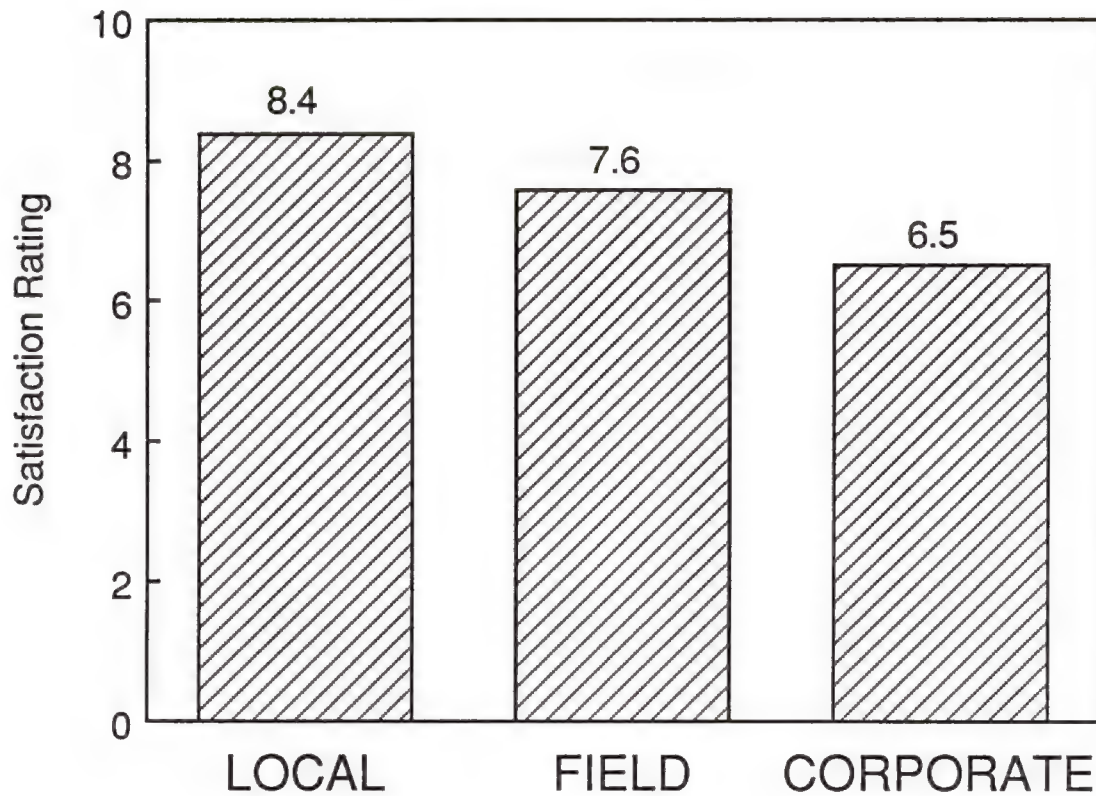
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
LOCAL—1988	8.3	3	10	2.0	34
FIELD—1988	7.8	4	10	1.5	23
CORPORATE—1988	7.0	3	10	1.9	19

INPUT





## SOFTWARE SUPPORT RATING (TOOLS UTILITY)



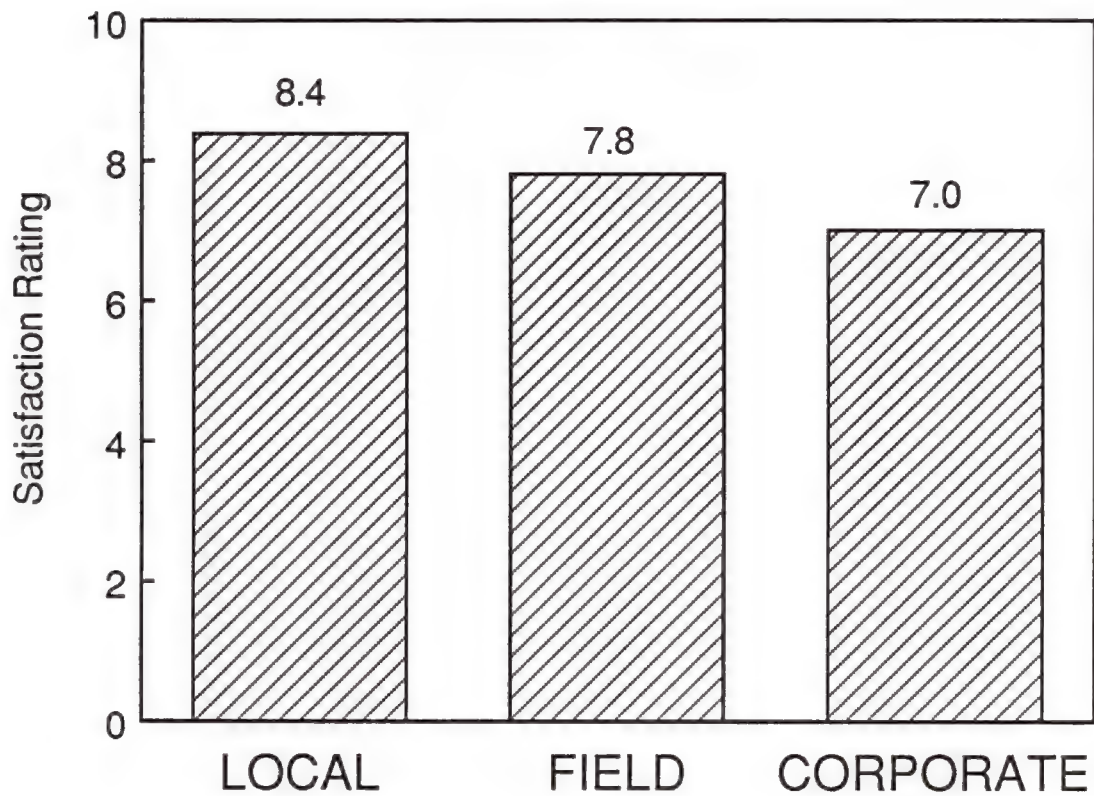
Q18: SOFTWARE SUPPORT RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
LOCAL—1988	8.4	3	10	1.8	53
FIELD—1988	7.6	4	10	1.6	37
CORPORATE—1988	6.5	2	10	2.2	29

INPUT



## SOFTWARE SUPPORT RATING (LIBRARIES)



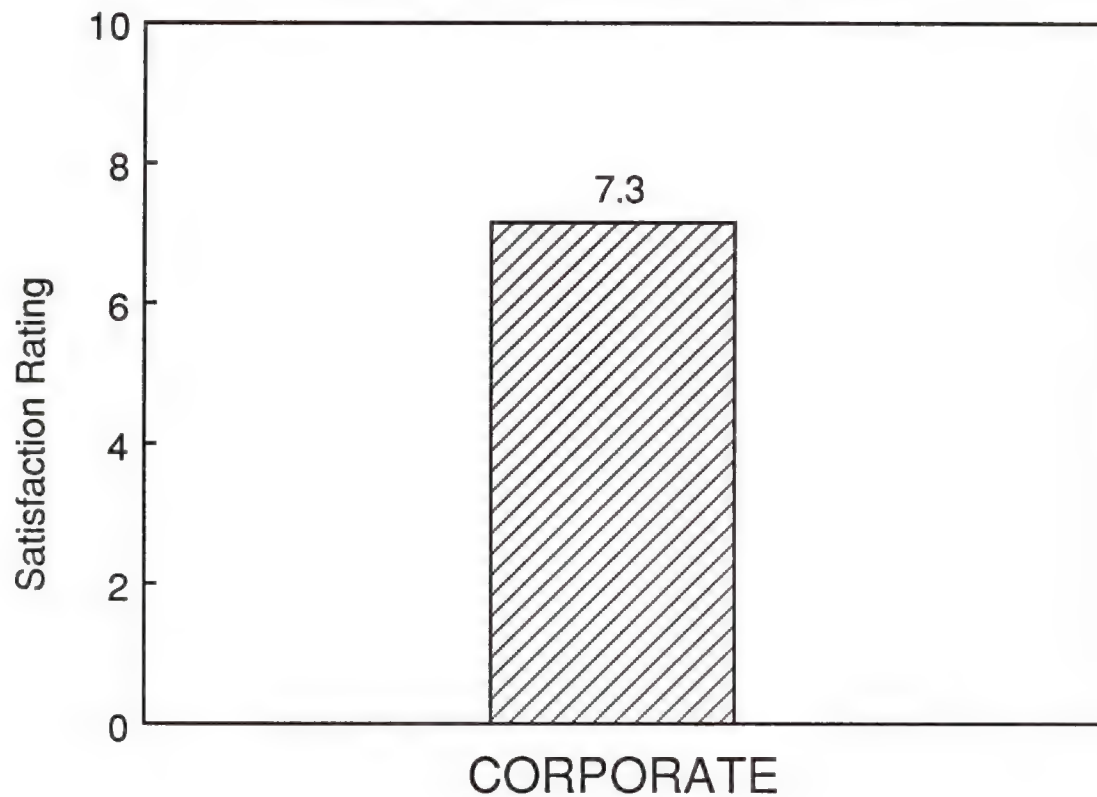
### Q18: SOFTWARE SUPPORT RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
LOCAL—1988	8.4	3	10	1.9	58
FIELD—1988	7.8	3	10	1.5	40
CORPORATE—1988	7.0	3	10	2.1	33

INPUT



## SOFTWARE SUPPORT RATING (OPERATING SYSTEM)



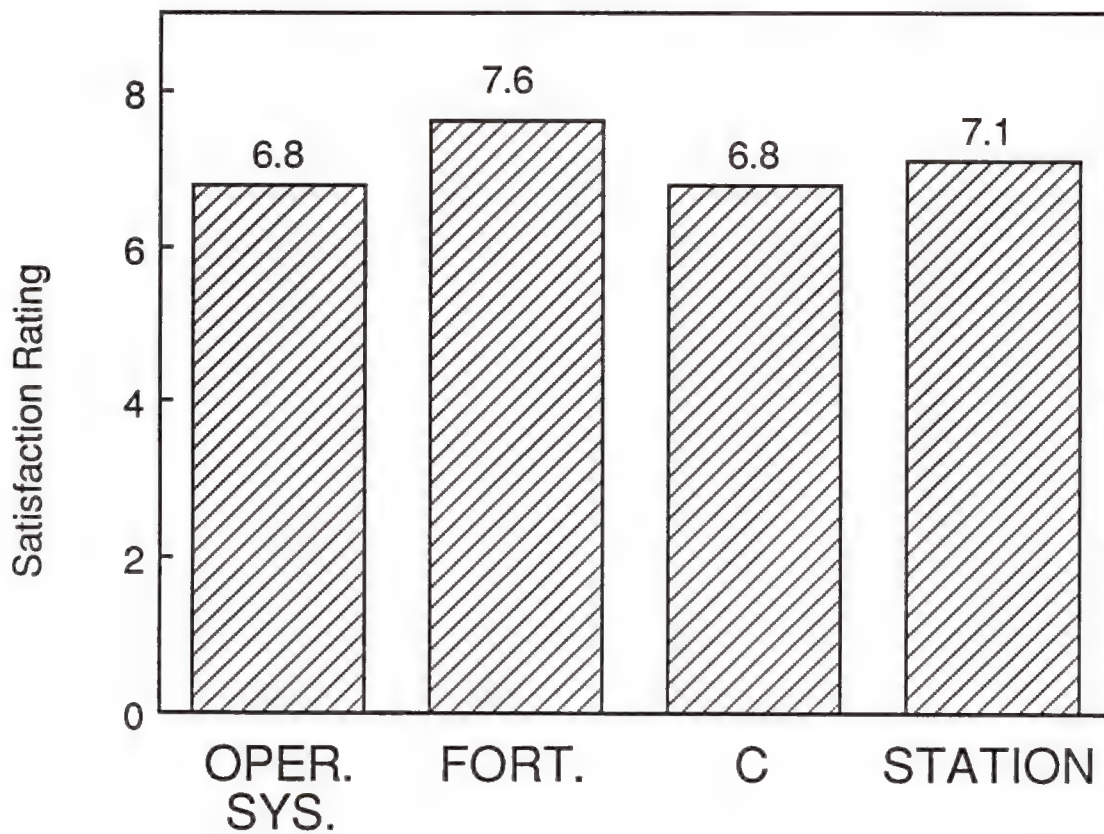
### Q18: SOFTWARE SUPPORT RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
CORPORATE—1988	7.3	3	10	2.0	44

INPUT



## SOFTWARE DOCUMENTATION SATISFACTION



### Q19: SYSTEM DOCUMENTATION SATISFACTION

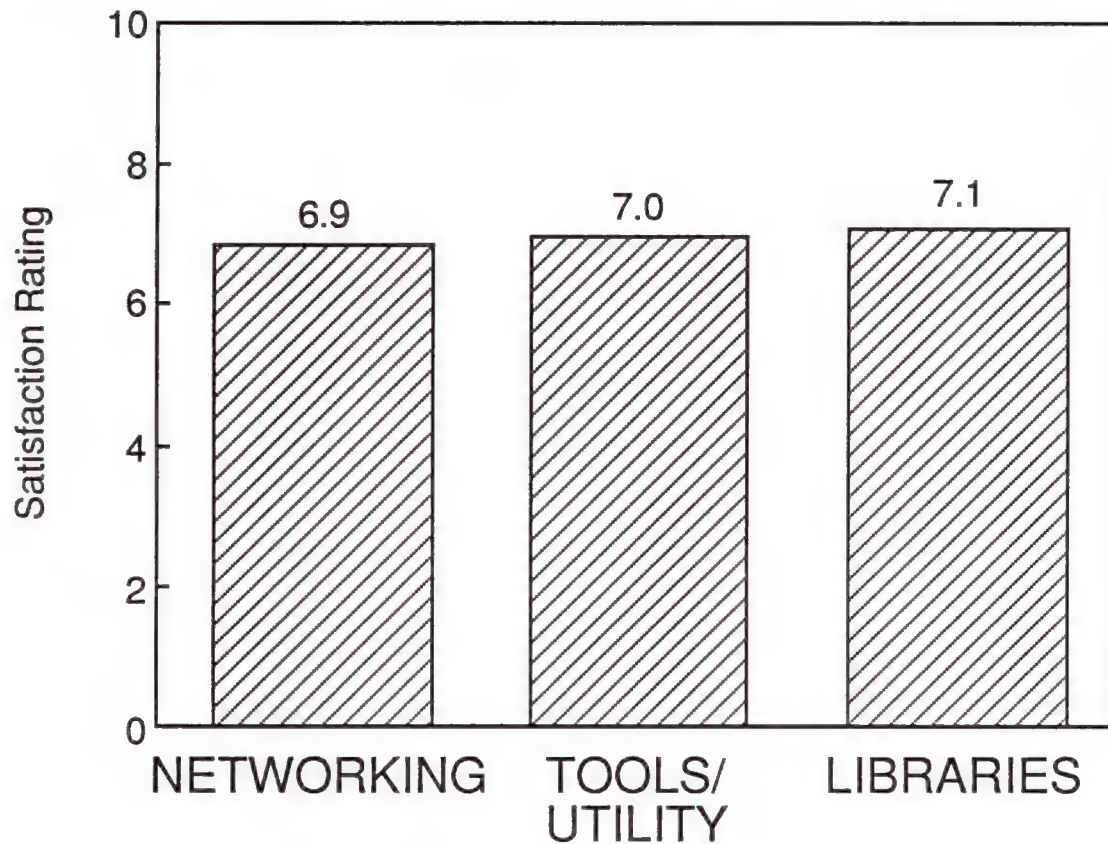
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
OPER. SYS.—1988	6.8	1	9	2.0	72
FORTTRAN—1988	7.6	1	10	1.5	71
"C"—1988	6.8	1	9	1.9	31
STATION—1988	7.1	4	10	1.5	59

INPUT





## SOFTWARE DOCUMENTATION SATISFACTION



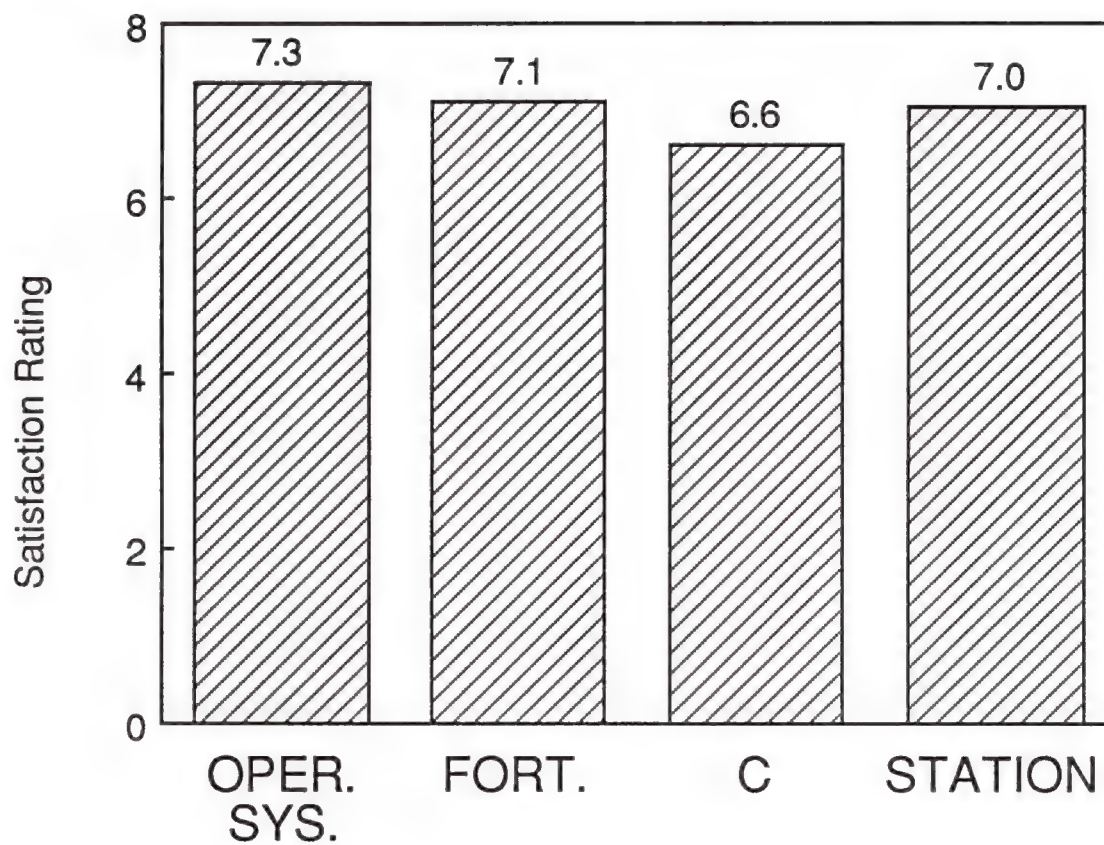
### Q19: SYSTEM DOCUMENTATION SATISFACTION

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
NETWORKING—1988	6.9	4	10	1.4	29
TOOLS/UTILITIES—1988	7.0	1	10	1.5	62
LIBRARIES—1988	7.1	2	10	1.5	64

INPUT



## ESCALATION PROCEDURES SATISFACTION



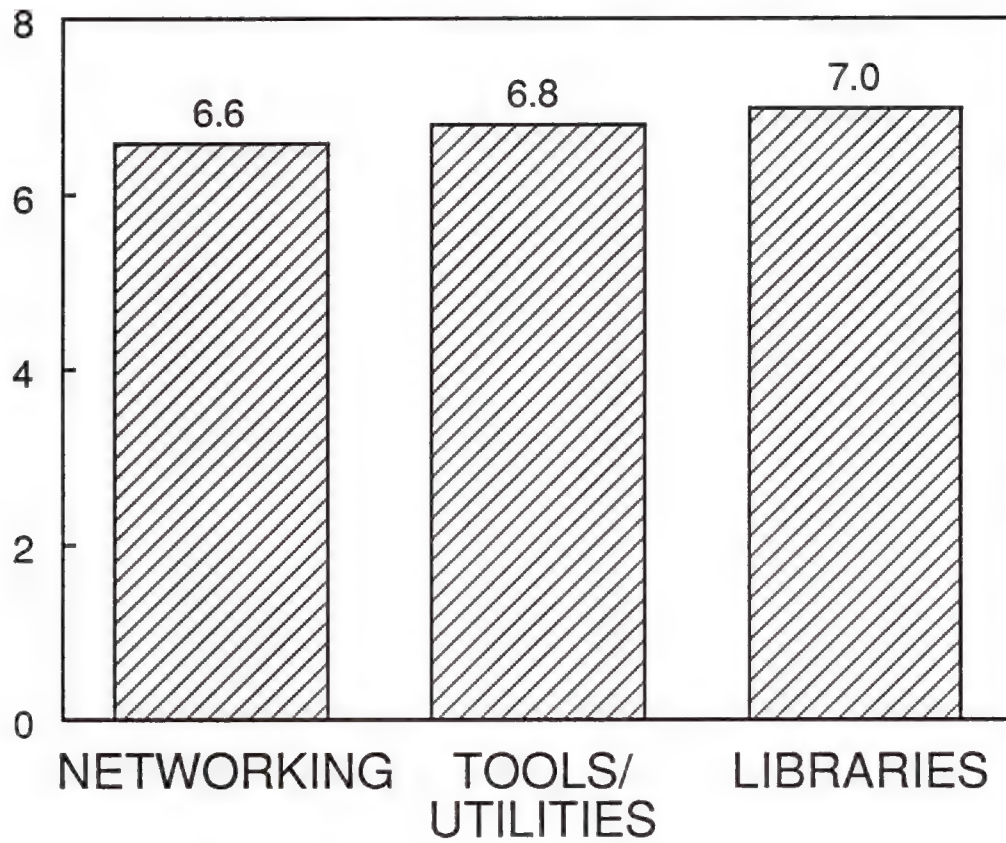
### Q19: ESCALATION PROCEDURES

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
OPER. SYS.—1988	7.3	2	10	2.0	64
FORTAN—1988	7.1	1	10	2.1	60
"C"—1988	6.6	1	10	2.4	26
STATION—1988	7.0	2	10	2.0	51

INPUT



## ESCALATION PROCEDURES SATISFACTION



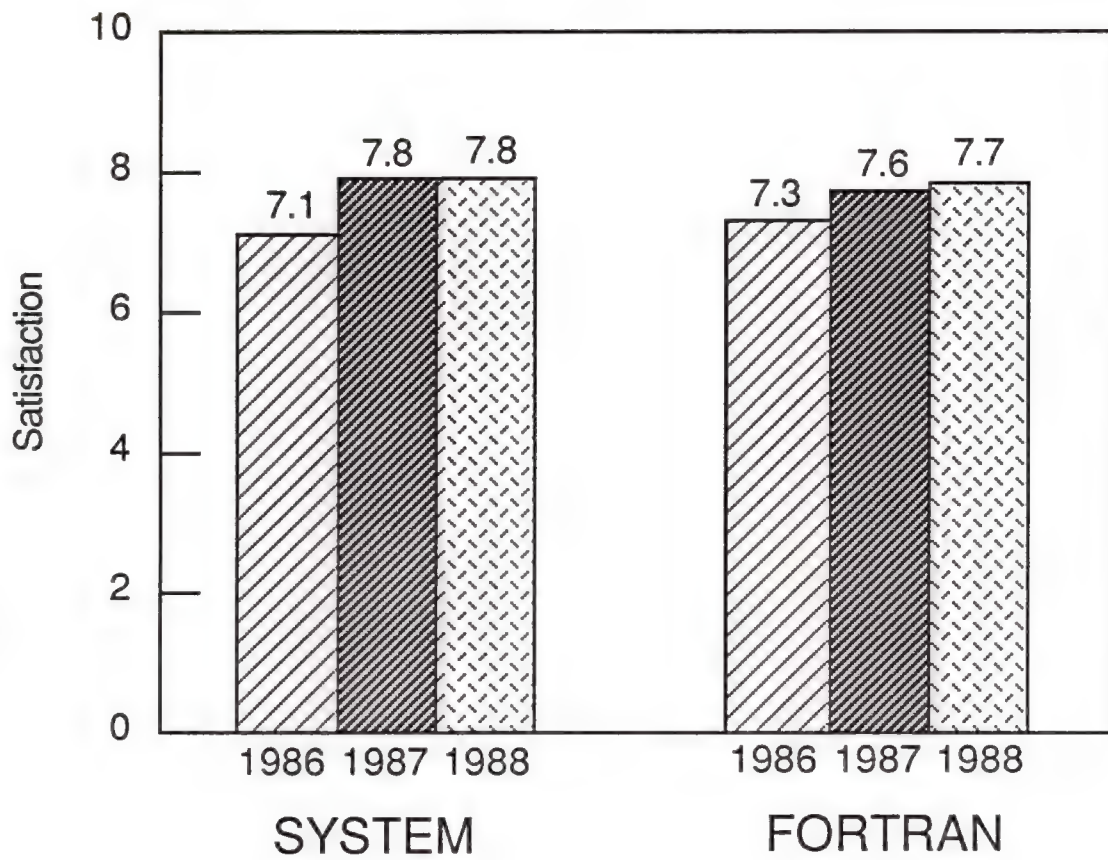
### Q19: ESCALATION PROCEDURES

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
NETWORKING—1988	6.6	2	10	2.2	25
TOOLS/UTILITIES—1988	6.8	1	10	2.0	46
LIBRARIES—1988	7.0	2	10	1.8	48

INPUT



## SOFTWARE TRAINING



### Q20 : TRAINING

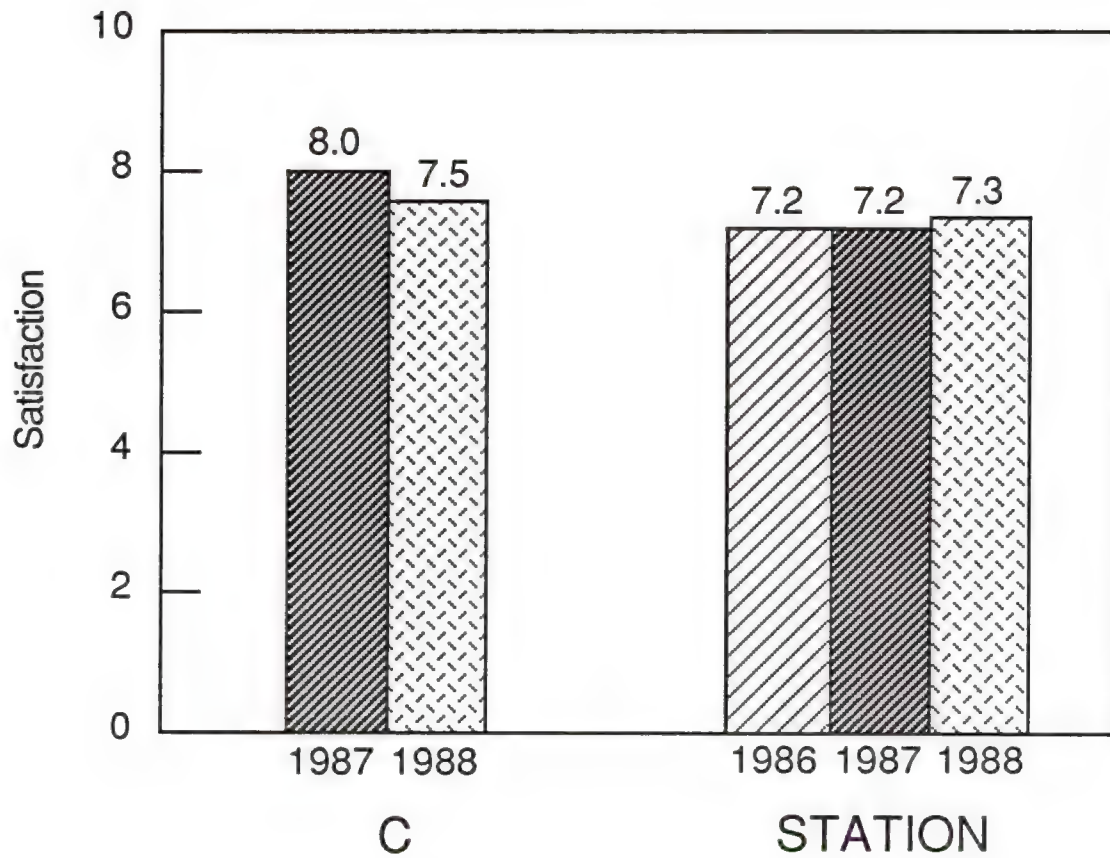
	MEAN	MIN	MAX	STD. DEV.	# CASES
SYSTEM - 1988	7.8	1	10	1.8	47
SYSTEM - 1987	7.8	4	10	1.3	32
SYSTEM - 1986	7.1	3	10	1.6	23
FORTRAN - 1988	7.7	1	10	1.8	36
FORTRAN - 1987	7.6	5	10	1.5	25
FORTRAN - 1986	7.3	5	9	1.1	12

INPUT





## SOFTWARE TRAINING



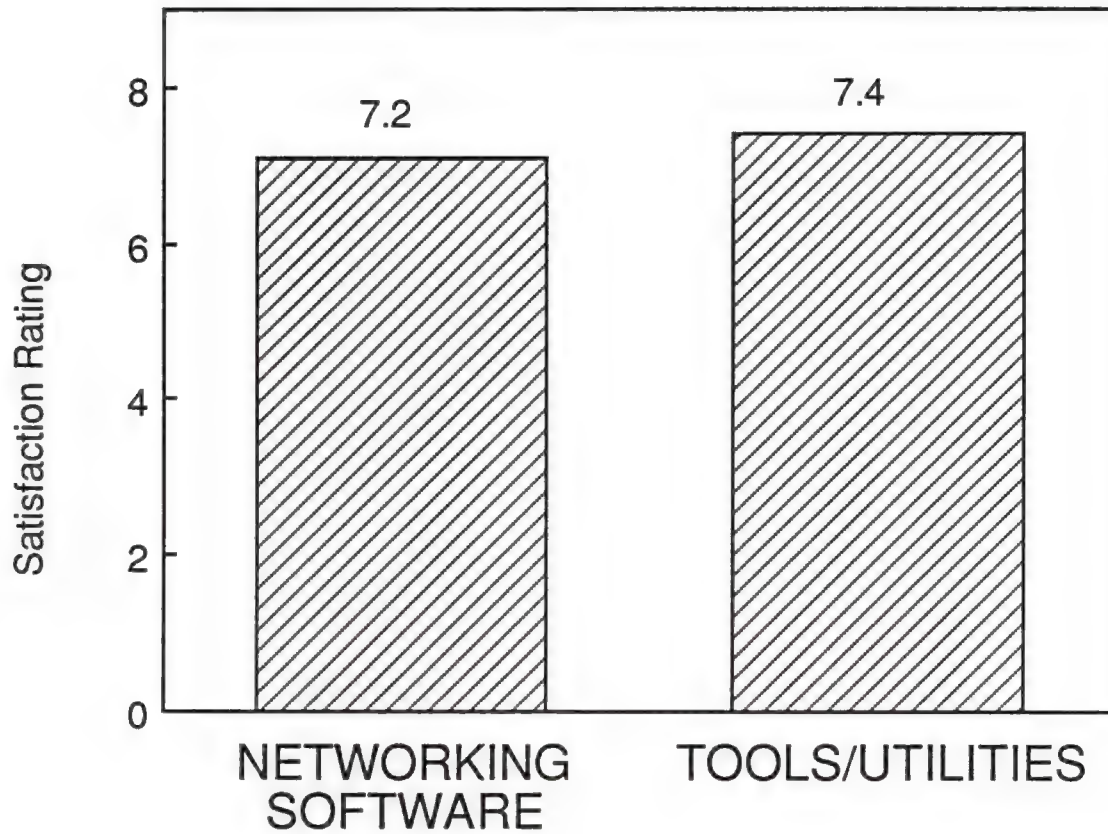
### Q20 : TRAINING

	MEAN	MIN	MAX	STD. DEV.	# CASES
C - 1988	7.5	1	10	2.0	20
C - 1987	8.0	6	10	1.4	5
STATION - 1988	7.3	1	10	1.9	27
STATION - 1987	7.2	4	9	1.3	18
STATION - 1986	7.2	5	9	1.2	9

INPUT



## SOFTWARE TRAINING



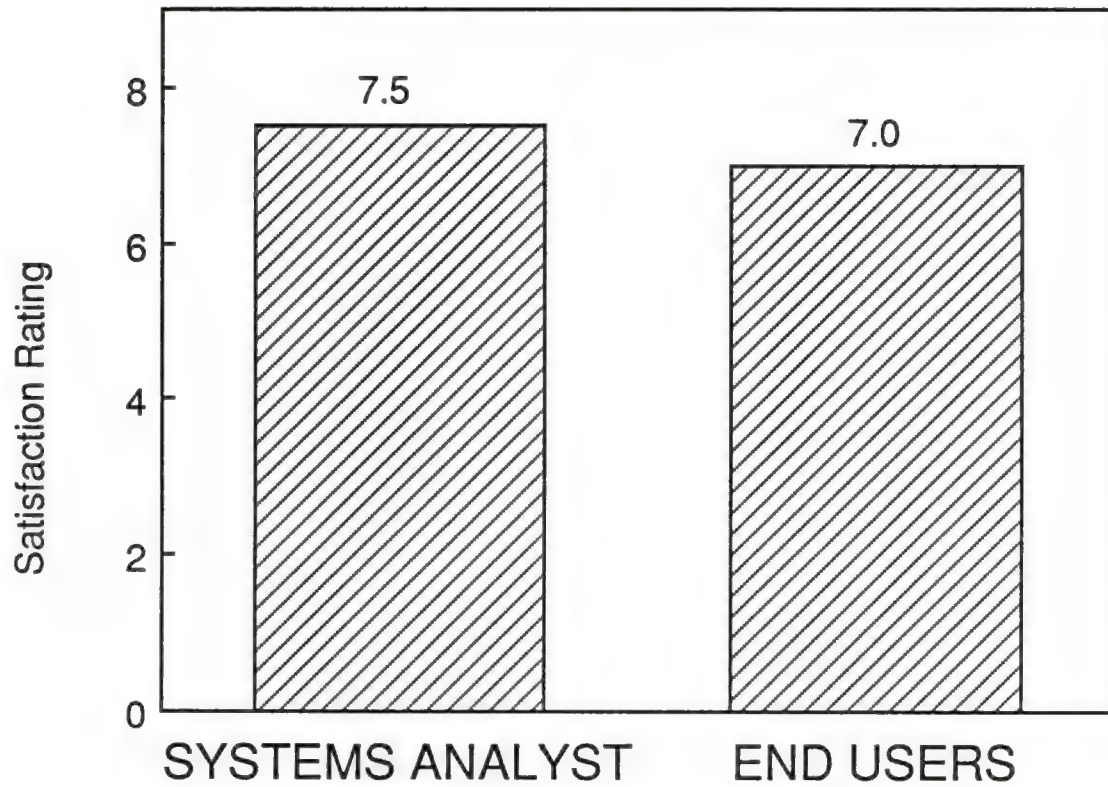
### Q20: TRAINING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
NETWORKING—1988	7.2	1	9	2.2	12
TOOLS/UTILITIES—1988	7.4	1	10	1.8	23

INPUT



## SOFTWARE TRAINING



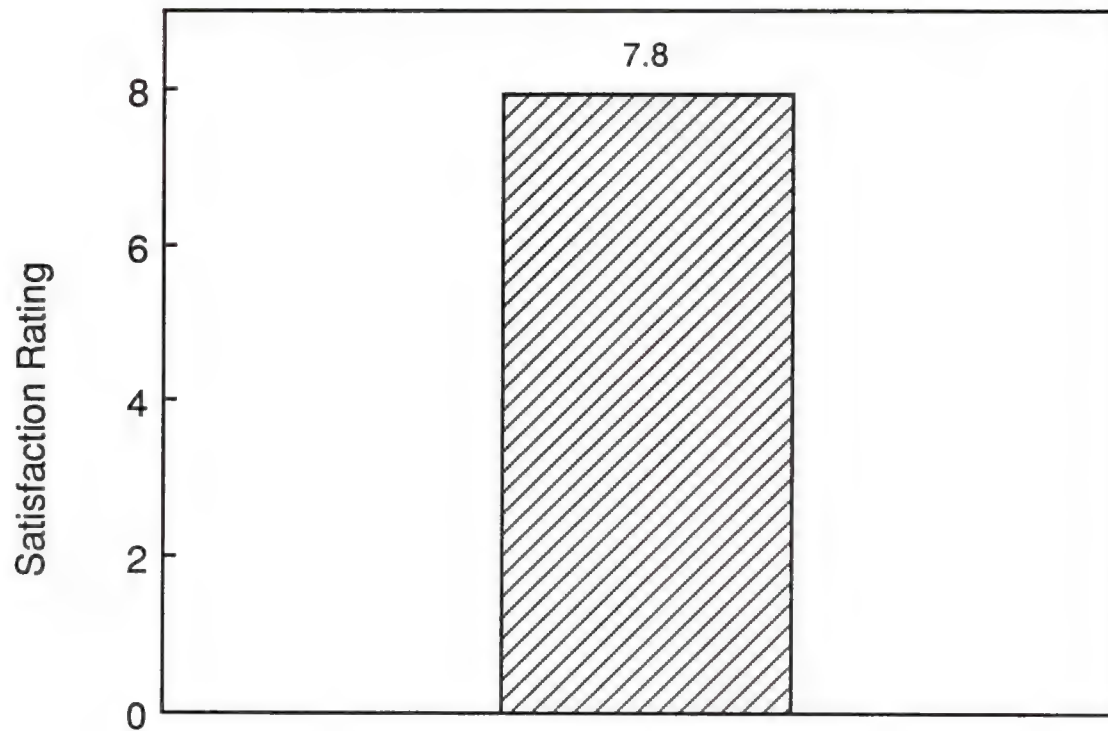
### Q20: TRAINING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEMS ANALYSTS—1988	7.5	1	10	1.9	28
END USER—1988	7.0	1	10	2.4	32

INPUT



## QUALITY OF APPLICATIONS SUPPORT



### Q24: RATE QUALITY OF APPLICATIONS SUPPORT

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
APPLICATIONS SUPPORT—1988	7.8	1	10	2.3	60

INPUT





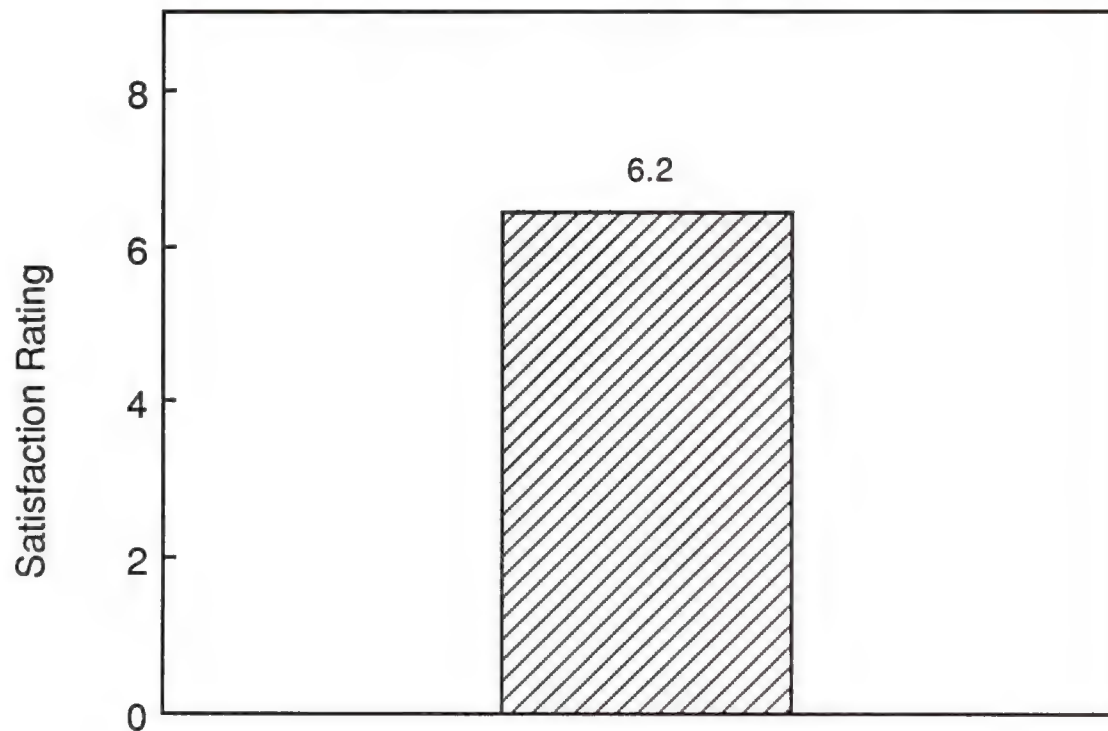
## THIRD-PARTY APPLICATIONS

<u>TOP 5</u>	<u>NUMBER OF MENTIONS</u>
Nastran	19
IMSL	8
Ansys	7
Gaussian	4
Disppla	3
Total Responses	<hr/> 75
Top 5 Percent of Total	<hr/> 55

INPUT



## INFORMED ABOUT PROBLEM RESOLUTION



Q16: HOW WELL INFORMED ABOUT PROBLEM RESOLUTION

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RESOLVE INFO —1988	6.2	1	10	2.5	75

INPUT



## OTHER SOFTWARE COMMENTS

- Positive
  - Very Good Support on a Saturday (107)
  - On-Site Support Good (125)

INPUT



## OTHER SOFTWARE COMMENTS

- Negative
  - Once Things Leave the Local Analysts, They Seem to Go into a Black Hole (122)
  - Many Problems Continue to Exist for Years (123)
  - Insufficient Local Expertise in Area of Networking (127)
  - If CRI Sale Depends on a Software Fix, CRI Will Respond Rapidly—If It Is Customer, Takes a Long Time (105)
  - Seems Like Software People Are in Place to Support Hardware Sales Instead of Existing Customers (105)
  - The Current Tolerance by Users of the Poor Cray Software Will Quickly Decrease in the Next Two Years, Especially as UNIX Becomes Available (120)

INPUT



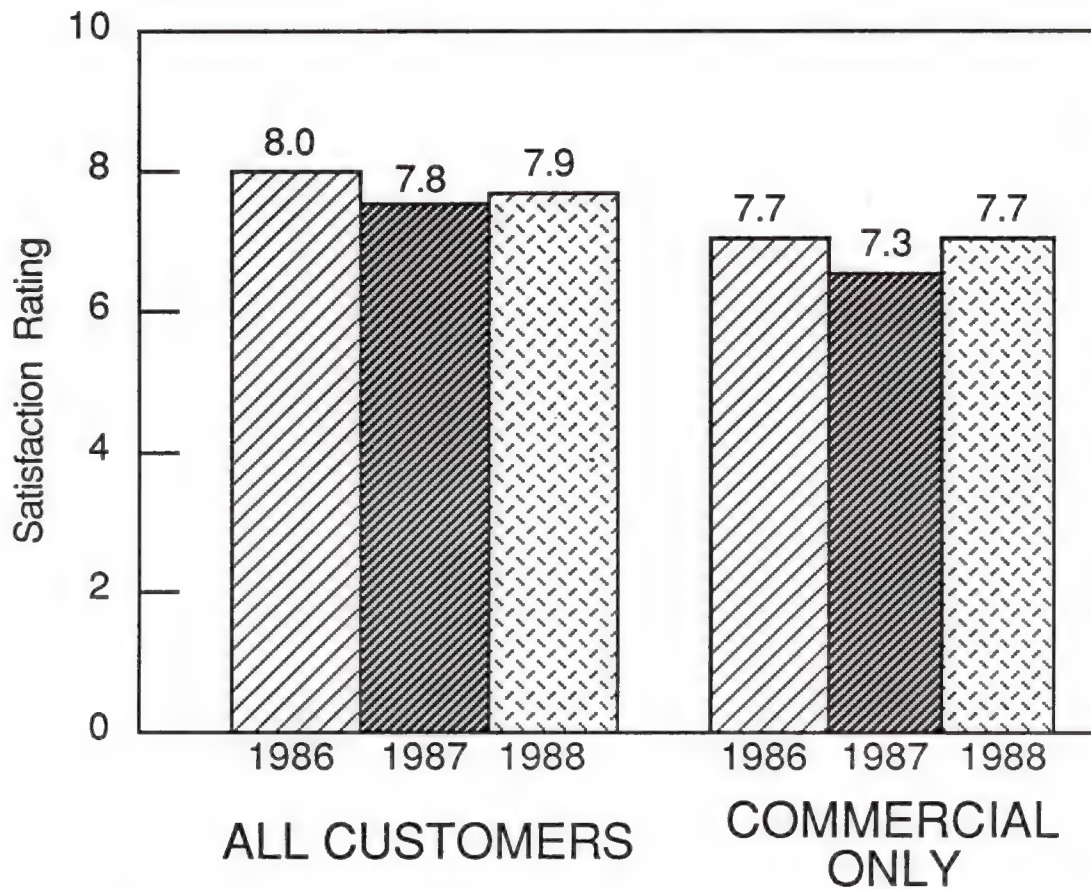


**CRI MARKETING  
AND  
HQ MANAGEMENT**

INPUT



## CRI RESPONSIVENESS— OVERALL NEEDS



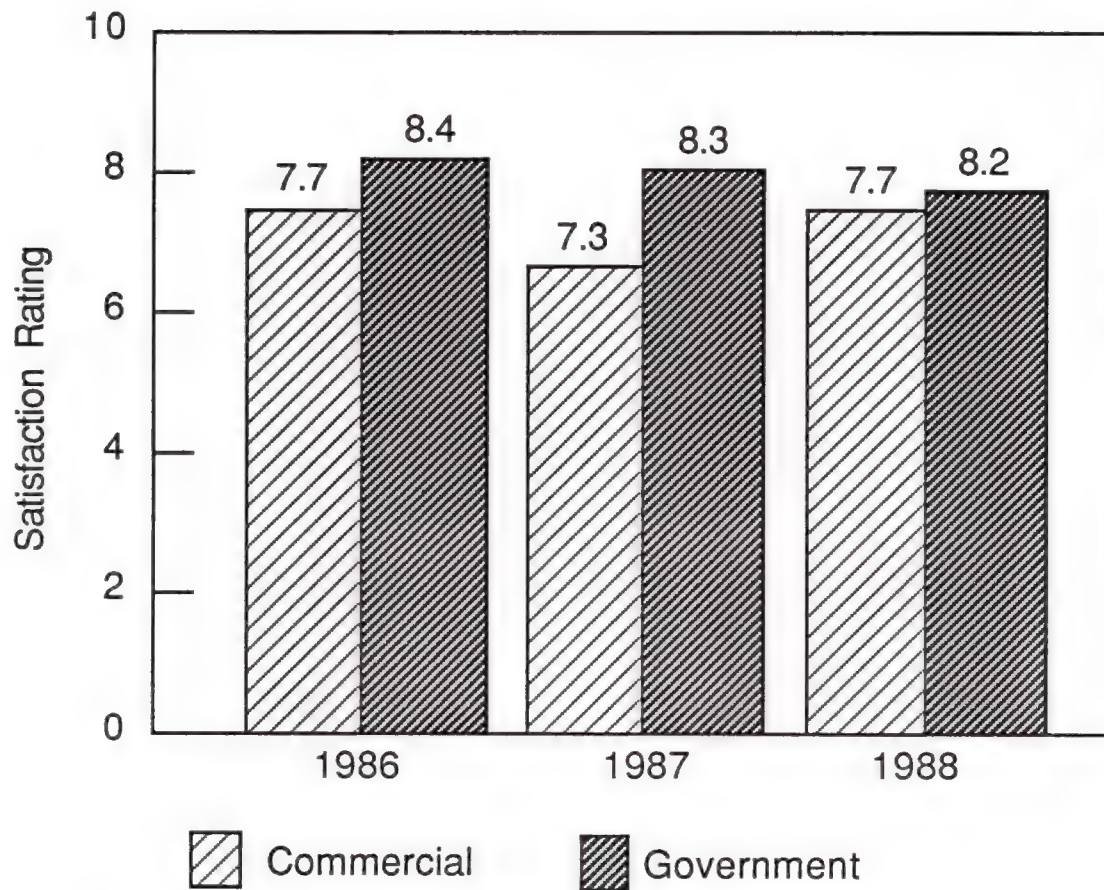
Q28 A: CRI RESPONSIVENESS—OVERALL NEEDS

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
OVERALL-1988	7.9	1	10	1.6	84
OVERALL-1987	7.8	3	10	1.7	57
OVERALL-1986	8.0	3	10	1.8	44
COMMERCIAL-1988	7.7	1	10	1.7	52
COMMERCIAL-1987	7.3	4	10	1.9	32
COMMERCIAL-1986	7.7	3	10	1.8	26

INPUT



## COMM./GOVT. SATISFACTION GAP



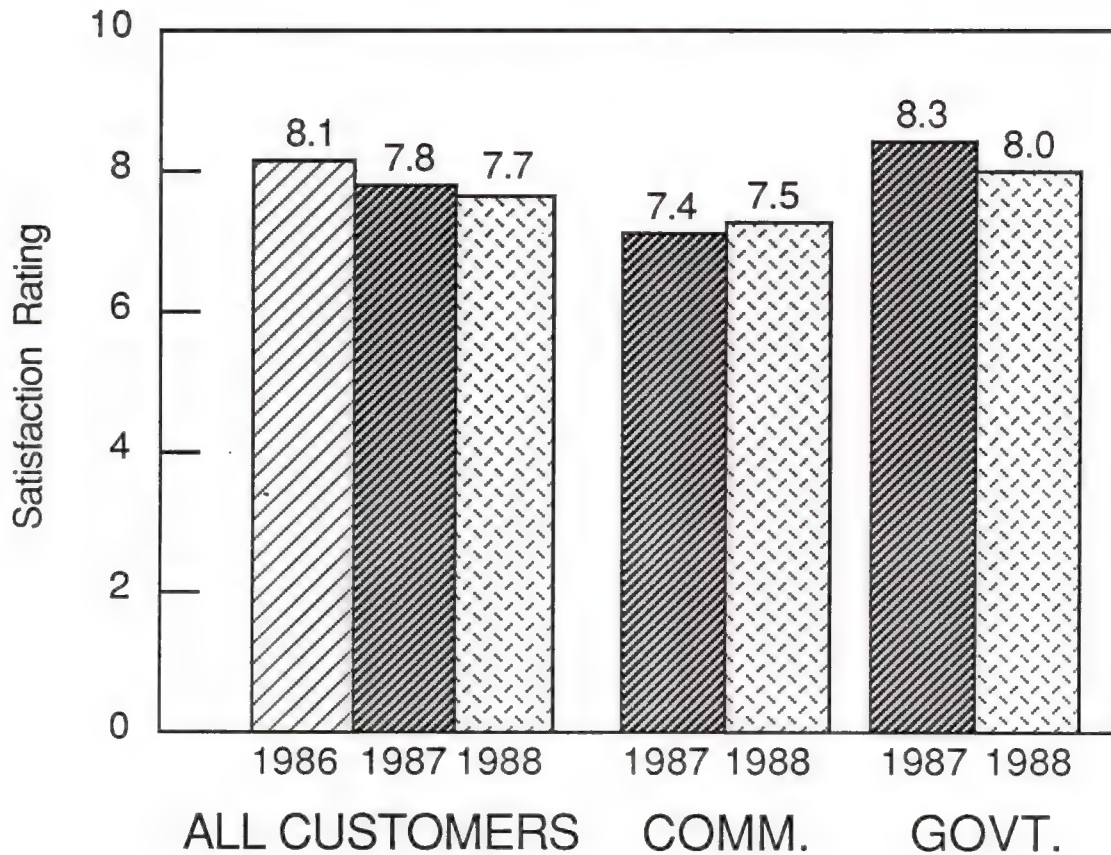
### Q28 A: CRI RESPONSIVENESS—OVERALL NEEDS

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
COMMERCIAL-1988	7.7	1	10	1.7	52
COMMERCIAL-1987	7.3	4	10	1.9	32
COMMERCIAL-1986	7.7	3	10	1.8	26
GOVERNMENT-1988	8.2	5	10	1.4	32
GOVERNMENT-1987	8.3	3	10	1.4	25
GOVERNMENT-1986	8.4	4	10	1.6	18

INPUT



## CRI RESPONSIVENESS— FINANCIAL QUESTIONS



Q28 B: CRI RESPONSIVENESS—FINANCIAL QUESTIONS

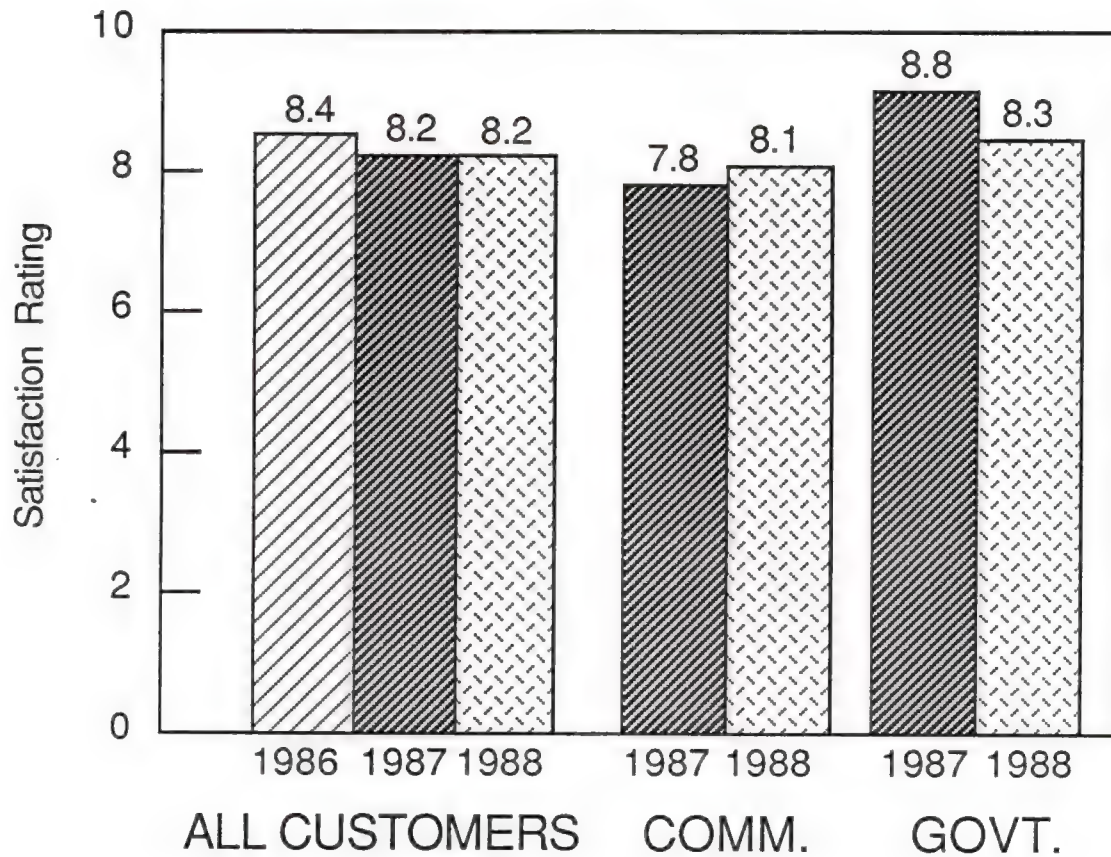
TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
ALL-1988	7.7	2	10	1.8	78
ALL-1987	7.8	2	10	1.7	48
ALL-1986	8.1	3	10	2.0	41
COMMERCIAL-1988	7.5	2	10	2.1	49
COMMERCIAL-1987	7.4	2	10	1.9	25
GOVERNMENT-1988	8.0	5	10	1.3	29
GOVERNMENT-1987	8.3	4	10	1.3	23

INPUT





## MARKETING RESPONSIVENESS: SIGNIFICANT COMM./GOVT. GAP



### Q28D: MARKETING RESPONSIVENESS

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
ALL-1988	8.2	3	10	1.7	80
ALL-1987	8.2	1	10	1.6	57
ALL-1986	8.4	5	10	1.5	41
COMMERCIAL-1988	8.1	3	10	1.8	50
COMMERCIAL-1987	7.8	1	10	1.9	32
GOVERNMENT-1988	8.3	5	10	1.4	30
GOVERNMENT-1987	8.8	7	10	1.1	25

INPUT



## MARKETING SUPPORT

- Getting Enough Marketing Support? (Q28F)

	<u>1987</u>	<u>1988</u>
- Yes =	88%	73%
- No =	12%	27%

- Comments Generally Mixed

- Examples of Comments

- Good for Sales, but Not Support (116)
- High Turnover. Wrong Information (104)
- Never Been Contacted Personally (122)
- Would Be Nice to See Marketing Reps' Boss Once or Twice a Year (124)
- Does Not Volunteer Sufficient Information. Not Knowledgeable (127)

INPUT



## MARKETING SUPPORT

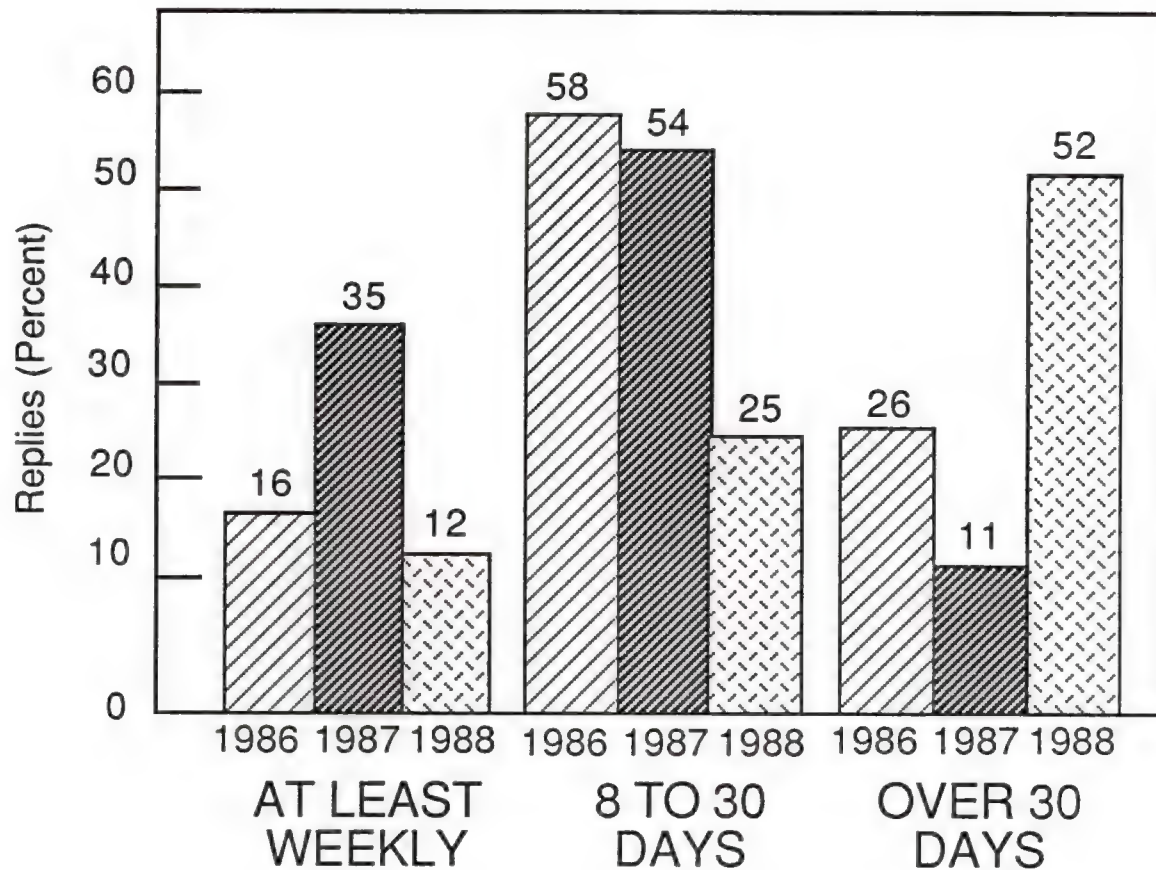
- Examples of Comments
  - My Rep Is Motivated by Next Sale Only (131)\*
  - Cray Is a Pleasure to Do Business With (153)
  - Local Rep Good, but Does Not Have Cray Support (159)\*
  - Sufficient Contact, Not Enough Support (202)\*

\* = Similar Concerns in 1986/1987 Survey

INPUT



## FREQUENCY OF SALES CONTACT



## TIME BETWEEN SALES CONTACTS

Q28E3: FREQUENCY OF INTERACTION WITH MARKETING REP.

TIME BETWEEN CONTACTS	1986*		1987		1988	
	#	%	#	%	#	%
AT LEAST WEEKLY	6	16	20	35	19	12
8 TO 30 DAYS	22	58	31	54	21	25
OVER 30 DAYS	10	26	6	11	43	52
TOTAL	38	100%	57	100%	83	89%

1986 survey measured sales visits only. 1987, 1988 include phone and visits.

INPUT





## ENOUGH INTERACTION WITH CRAY CORPORATE MANAGEMENT? (Q28G)

	<u>1987</u>	<u>1988</u>
Yes =	83%	80%
No =	17%	20%

- Examples of Comments
  - Cray Management Stonewalled Us on UNICOS Problem (110)
  - They Probably Have Better Things to Do (122)
  - Need More Information, Direction (145)
  - Remote Location. Limited Installation in Middle East (163)
  - Cray Does Not Have Understanding of Account, or Maybe Industrial Needs (202)

INPUT



**KEPT AWARE ENOUGH OF CRAY'S  
HARDWARE/SOFTWARE DIRECTIONS? (Q29)**

	<u>1987</u>	<u>1988</u>
Yes =	62%	73%
No =	38%	27%

- Examples of Comments
  - Greater Executive-to-Executive Orientation (104)
  - Be Informed of Problems before the Fact, Not After (122)
  - More Regular Updates on Hardware Plans and Progress (123)
  - More Visibility on Schedules and Date Changes (142)
  - More Publications about Strategies and Developments (148)
  - More Information on Operating System Directions (156)
  - More Awareness of Directions on Low End (172)

INPUT



## **SUGGESTIONS TO IMPROVE INTERACTION**

- Cray Organize Technical Tour of Other Sites (101)
- Annual Visit by Key Senior Executive to Customer Site (103)
- Involve Users in Planning Future Products (122)
- More Frequent Domestic CUG Meetings (151)
- More On-Site Visits by Strategic Planners (163)
- Set Up CUG (in Japan) as Soon as Possible (205)
- Regular Site Audit Visits by Senior Management (200)

INPUT



## ATTITUDES TOWARD CUG

- Is an Effective Channel to Communicate with Cray Management? (Q30A)

	<u>1987</u>	<u>1988</u>
- Yes =	56%	63%
- No =	44%	37%

- Do You Use This Channel? (Q30B)

	<u>1987</u>	<u>1988</u>
- Yes =	64%	64%
- No =	36%	36%

- Comments

- Best for Communicating with Other Users

- Too Much on a Technical Level

- Weak-Willed, Won't Stand Up to Cray

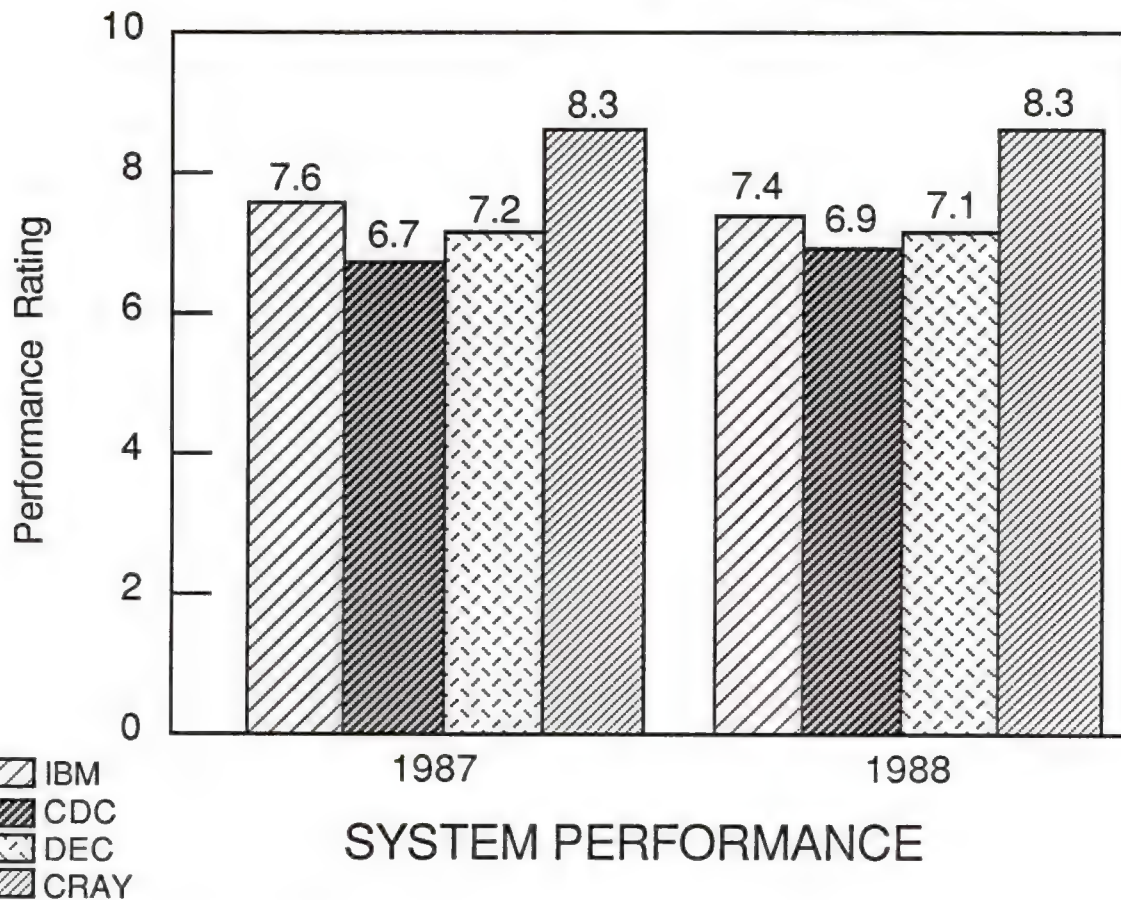
- CRI Executives Are Visible, but Not Sure Anything Happens

INPUT





## VENDOR COMPARISONS



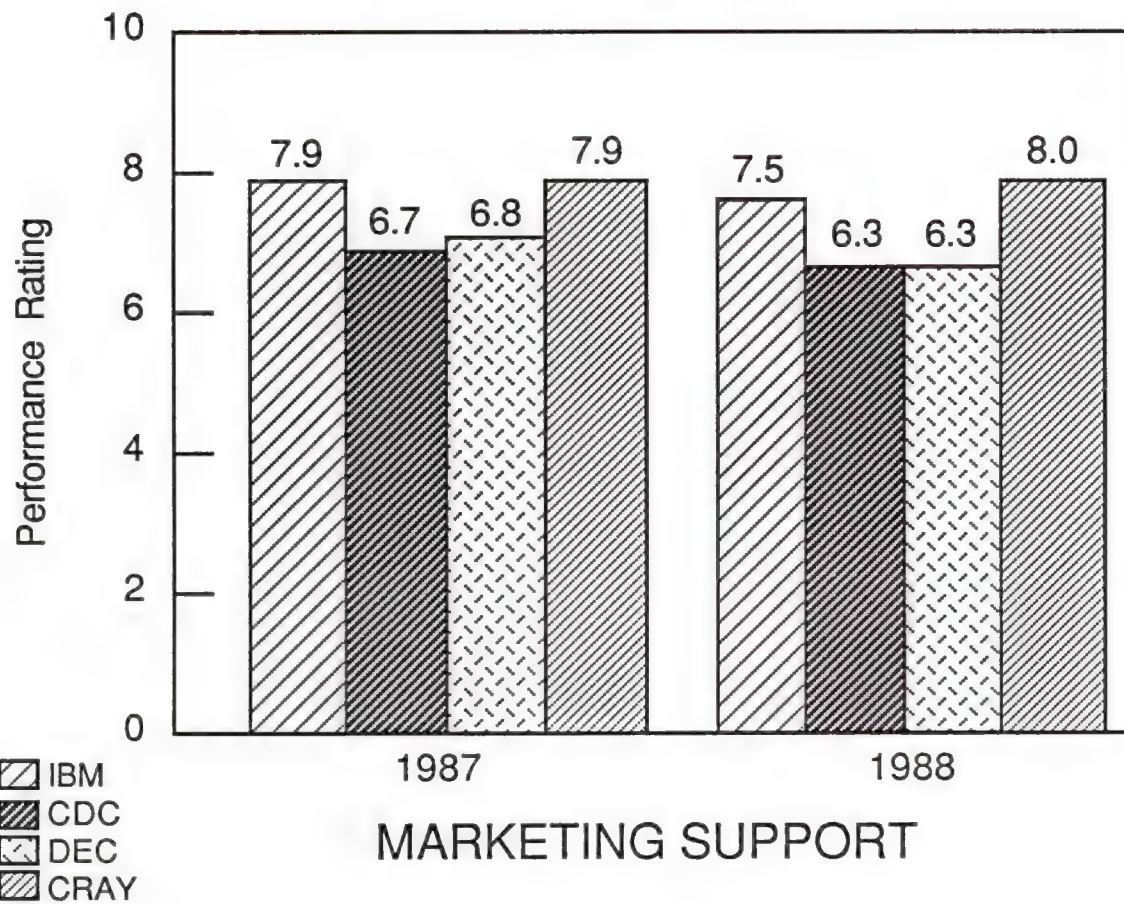
### Q27 A - D: VENDOR PERFORMANCE

VENDOR	MEAN	MIN	MAX	STD. DEV.	# CASES
<b>SYSTEM PERFORMANCE—1987</b>					
IBM	7.6	3	10	1.6	48
CDC	6.7	1	9	1.7	26
DEC	7.2	2	10	1.7	38
CRAY	8.3	4	10	1.3	47
<b>SYSTEM PERFORMANCE—1988</b>					
IBM	7.4	2	10	1.8	47
CDC	6.9	5	9	1.4	16
DEC	7.1	1	10	2.2	41
CRAY	8.3	4	10	1.3	62

INPUT



## VENDOR COMPARISONS



### MARKETING SUPPORT

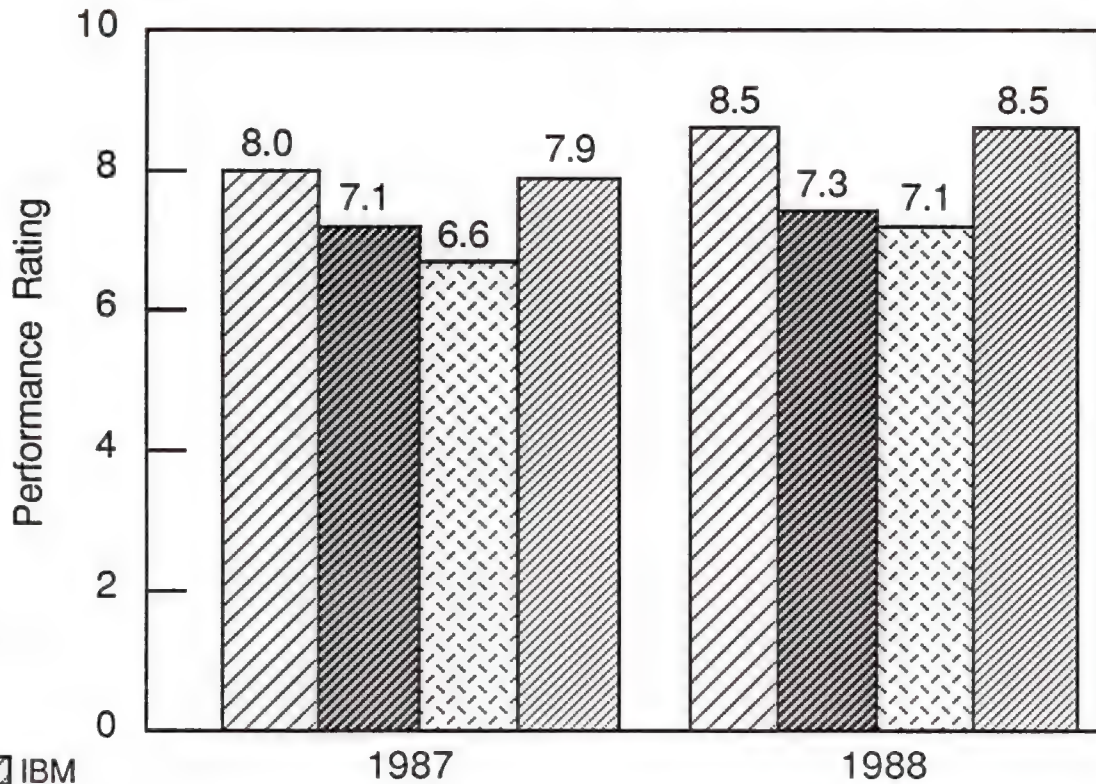
#### Q27 A - D: VENDOR PERFORMANCE

VENDOR	MEAN	MIN	MAX	STD. DEV.	# CASES
<b>MARKETING SUPPORT—1987</b>					
IBM	7.9	5	10	1.5	39
CDC	6.7	1	9	2.2	25
DEC	6.8	3	10	2.0	36
CRAY	7.9	2	10	1.6	47
<b>MARKETING SUPPORT—1988</b>					
IBM	7.5	2	10	2.3	46
CDC	6.3	1	9	2.1	16
DEC	6.3	1	10	2.7	42
CRAY	8.0	4	10	1.4	61

INPUT



## VENDOR COMPARISONS



[Diagonal lines] IBM  
 [Cross-hatch] CDC  
 [Dotted] DEC  
 [Vertical lines] CRAY

### HARDWARE MAINTENANCE

#### Q27 A - D: MAINTENANCE

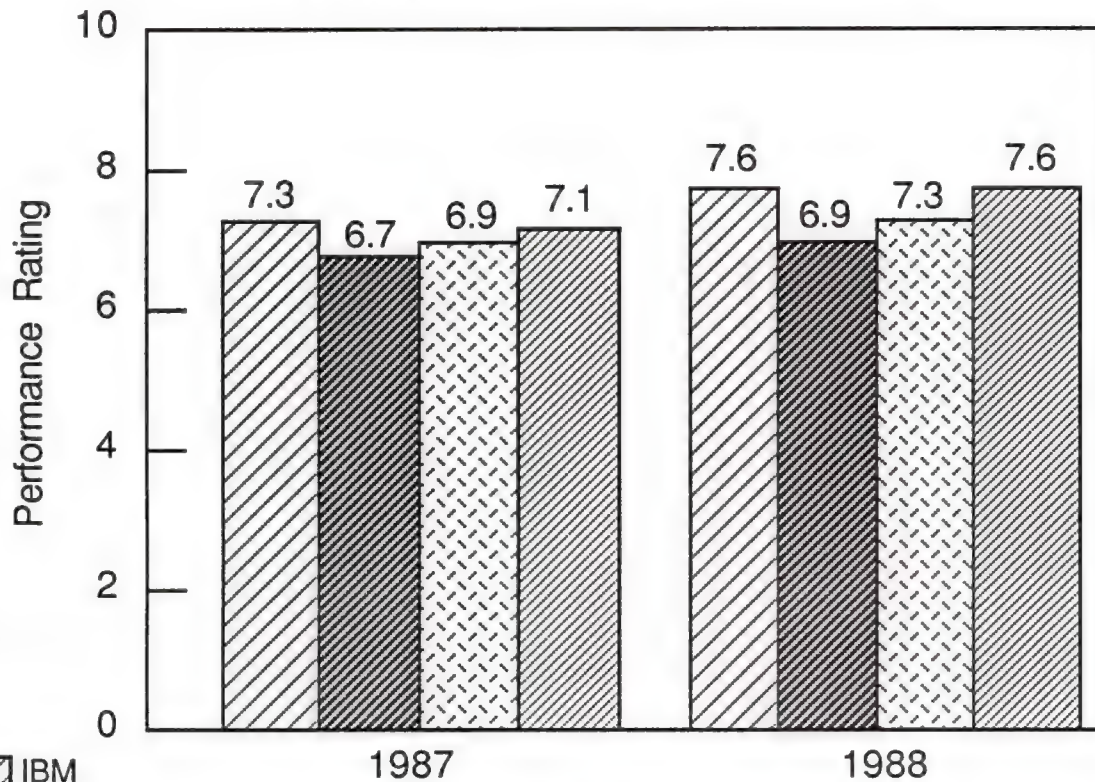
VENDOR	MEAN	MIN	MAX	STD. DEV.	# CASES
<b>HARDWARE MAINTENANCE—1987</b>					
IBM	8.0	3	10	1.9	39
CDC	7.1	2	10	1.6	23
DEC	6.6	3	10	2.0	36
CRAY	7.9	1	10	1.6	47
<b>HARDWARE MAINTENANCE—1988</b>					
IBM	8.5	5	10	1.4	48
CDC	7.3	5	9	1.4	16
DEC	7.1	2	10	2.2	45
CRAY	8.5	1	10	1.7	63

INPUT





## VENDOR COMPARISONS



[Diagonal lines] IBM  
 [Cross-hatch] CDC  
 [Dotted] DEC  
 [Diagonal lines] CRAY

### SOFTWARE MAINTENANCE

#### Q27 A - D: MAINTENANCE

VENDOR	MEAN	MIN	MAX	STD. DEV.	# CASES
<b>SOFTWARE MAINTENANCE—1987</b>					
IBM	7.3	3	10	1.7	35
CDC	6.7	5	10	1.2	25
DEC	6.9	3	9	1.5	34
CRAY	7.1	4	10	1.5	46
<b>SOFTWARE MAINTENANCE—1988</b>					
IBM	7.6	3	10	1.8	45
CDC	6.9	4	8	1.4	16
DEC	7.3	1	10	1.9	40
CRAY	7.6	4	10	1.6	59

INPUT



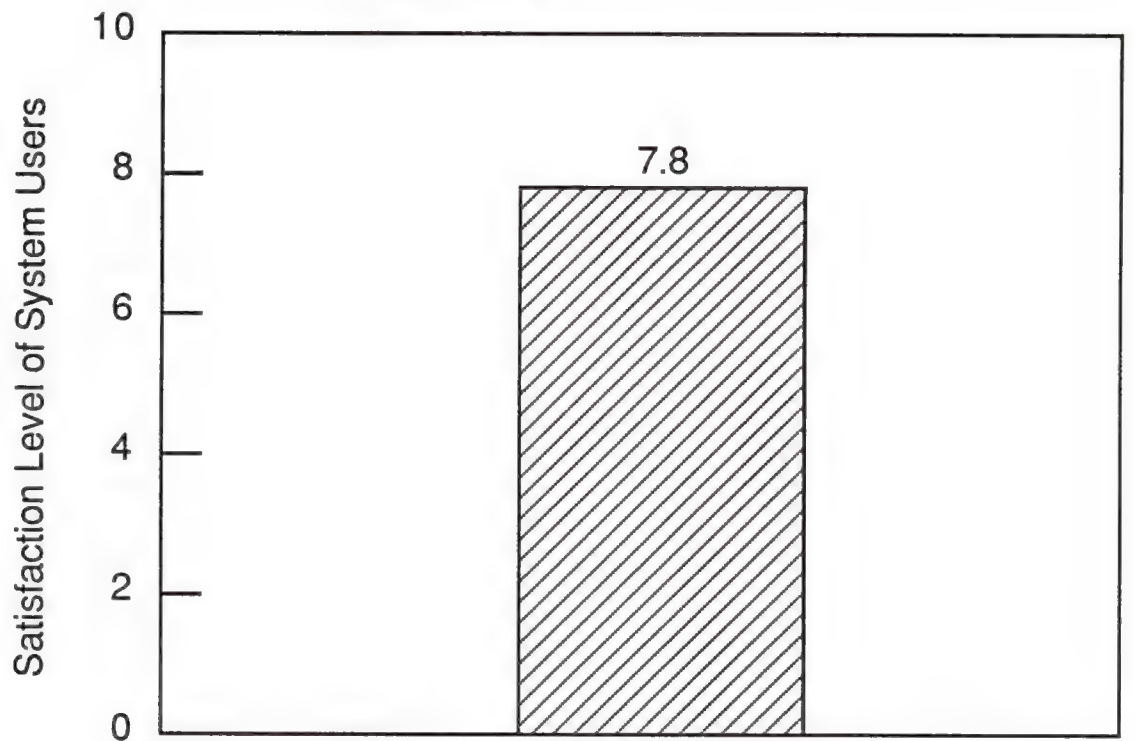


## MEASUREMENT OF USER SATISFACTION

- Do you measure user satisfaction?

- Yes = 81%

- No = 19%



TYPE	MEAN	MIN	MAX	STD. DEV.	#CASES
SATISFACTION-1988	7.8	3	10	1.3	78

INPUT



## **AREA WHERE CRAY NEEDS MOST IMPROVEMENT**

- Of 78 Total Responses:
  - 38% (30 Responses) Directly Related to Software Quality and Development
- Other Common Areas Included:
  - Acknowledgement of Competition
  - Price Reduction
  - Hardware Migration Paths
  - Hardware Reliability
  - Improved Security
  - Improved Management Control Information (Accounting, Error Statistics, etc.)

INPUT



## **CRAY'S SINGLE GREATEST STRENGTH**

- Of 81 Total Responses:
  - 54% (44 Responses) Directly Related to Hardware Size, Speed, Architecture, etc.
- Other Common Areas Included:
  - Company Reputation
  - Response to Customer Needs
  - Market Share

INPUT



## **CUSTOMER IMPRESSIONS/CONCERNS**

- CRI People
  - CRI People Care a Lot, Are Very Dedicated\*
  - CRI Listens More Than They Respond
- Hardware
  - Reliability Needs More Attention\*
  - Better Diagnostics Needed\*
  - Improved Tape Support Desired\*
  - Field Upgradability Needed

\* = Similar Response in 1986/1987 Survey

INPUT





## **CUSTOMER IMPRESSIONS/CONCERNS**

- Software
  - Progress Being Made Regarding Reliability\*
    - COS Complaints Remain High. Little Change from 1987 Survey\*
    - FORTTRAN Complaints Remain High\*
  - Very High Frustration with Bug Frequency/Time to Repair\*
    - Customers Dislike Being Used to Find Errors\*
    - Existing Fixes Not Readily nor Uniformly Communicated\*
  - CRI Relies Too Much on Hardware Speed to Cover Software Inefficiencies\*

\* = Similar Response in 1986/1987 Survey

INPUT



## **CUSTOMER IMPRESSIONS/CONCERNS**

- Systems
  - Want Better Fit of Cray into Total Computing Environment. CRI Attitude Still Perceived as Standalone Machine-Oriented\*
- Prices and Terms
  - Hardware Costs Are High\*
  - Maintenance Costs Are High\*
  - Contract Policies Are Too Rigid Regarding Software Licensing\*
- Organization
  - Hard to Identify Who's in Charge at Middle Levels\*

\* = Similar Response in 1986/1987 Survey

INPUT



# **ANALYSIS OF FINDINGS INTERNATIONAL SUMMARY**

INPUT



## DOMESTIC AND INTERNATIONAL SIMILARITIES AND DIFFERENCES (Selected Indicators)

	<u>Domestic</u> (Percent)	<u>Int.</u> (Percent)
• Primary Mode Types Are Similar with More C-1's and Less C-2's		
- XMP	77	62
- C-1	16	31
- C-2	7	—
• Mix of Operating Systems Are Different, with More COS and No CTSS		
- COS	71	91
- UNICOS	17	9
- CTSS	12	—
• System Utilization Is Generally Higher		
0-41%	11	8
41-89%	49	33
90-100%	38	58
• The Mix between Production and Research Is Nearly the Same		
Research	54	50
Production	46	50

INPUT





## SELECTED INDICATORS DECISION IMPORTANCE CRITERIA

- In Most Cases, Including International Data with Domestic Data Has Little Impact on U.S. Results

	<u>Ratings</u>		
	<u>Total</u>	<u>Int</u>	<u>U.S.</u>
• Overall System Performance	9.2	9.4	9.1
• Overall System Price	7.9	8.0	7.9
• Price Performance	8.6	8.4	8.6
• Hardware Reliability	8.9	8.7	8.9
• Systems Software:			
Performance	8.1	8.3	8.0
Reliability	8.7	8.4	8.8
Usability	8.0	7.8	8.1
Functionality	8.1	7.9	8.1
Maintenance Support	8.0	8.2	8.0
Training	6.1	6.5	6.0
Documentation	6.9	6.8	6.9
• Application Software Availability	7.1	7.7	6.7
• Networking/Connectivity	8.3	8.5	8.3
• Conversion Ease	7.6	7.5	7.6

INPUT



## SELECTED INDICATORS CRAY MEETING DECISION CRITERIA

- In Several Areas, International Customers Rated Cray Lower than U.S. Customers, but Differences Had Little Impact on Overall Results.

	<u>Ratings</u>		
	<u>Total</u>	<u>Int</u>	<u>U.S.</u>
• Overall System Performance	8.0	7.5	8.2
• Overall System Price	6.8	6.7	6.8
• Price Performance	7.2	6.6	7.4
• Hardware Reliability	7.8	7.3	7.9
• Systems Software:			
Performance	7.4	7.4	7.4
Reliability	7.0	6.3	7.2
Usability	7.3	7.1	7.4
Functionality	6.8	6.5	6.8
Maintenance Support	7.7	7.1	7.8
Training	6.7	6.4	6.8
Documentation	6.5	5.9	6.7
• Application Software Availability	7.2	7.3	7.2
• Networking/Connectivity	7.4	7.1	7.4
• Conversion Ease	7.2	6.8	7.3

INPUT



# **ANALYSIS OF FINDINGS REGIONAL SUMMARIES**

INPUT



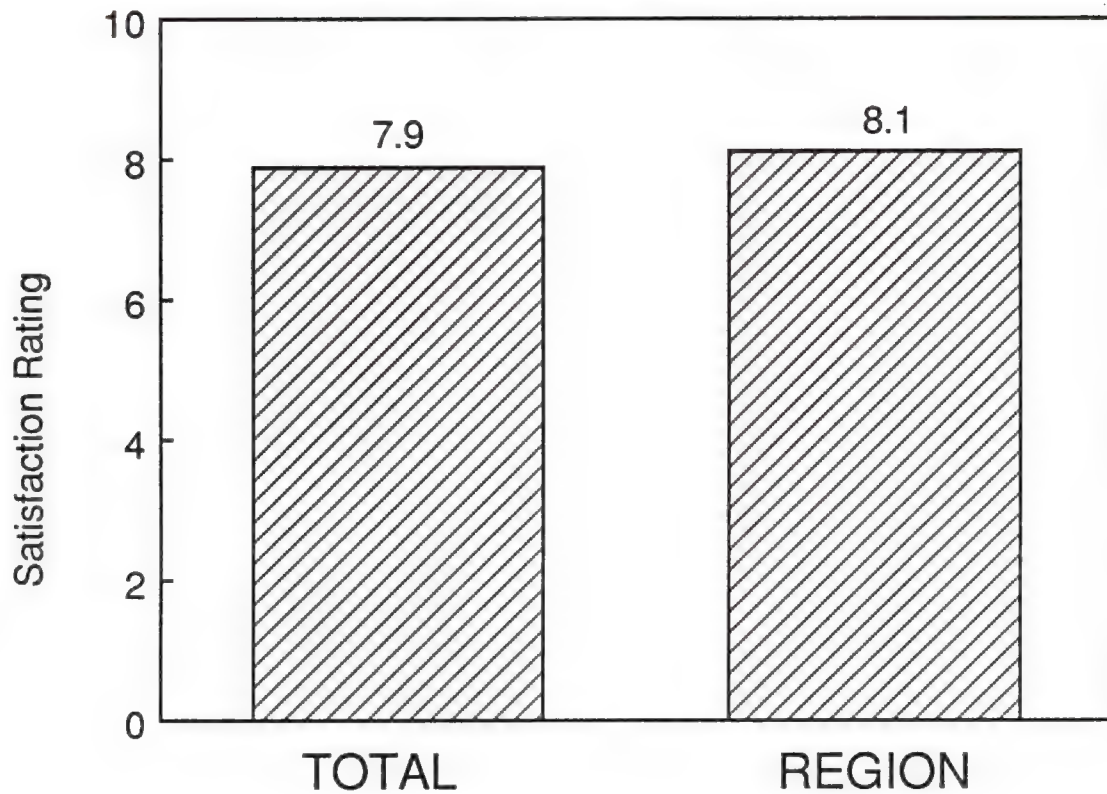
# **CENTRAL REGION**

INPUT





## CRAY LIVING UP TO EXPECTATIONS (Central Region)



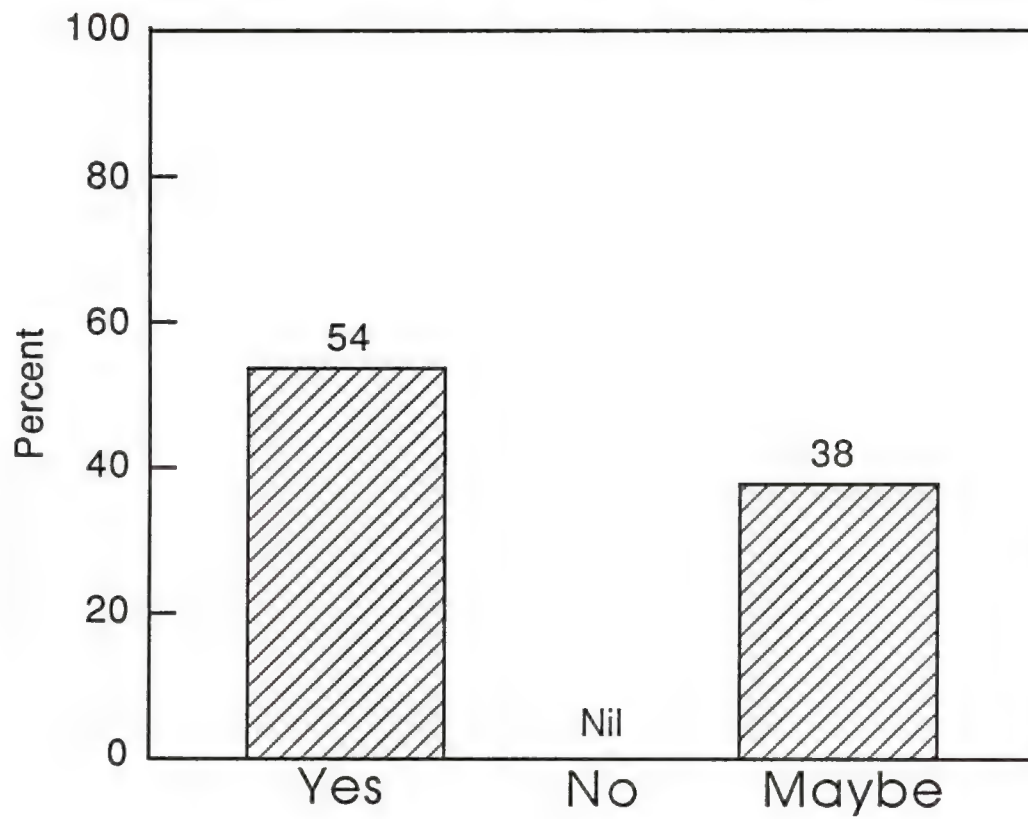
Q25: HOW WELL IS CRAY SYSTEM LIVING UP TO YOUR EXPECTATIONS?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.0	2	10	1.5	83
REGION—1988	8.1	5	10	1.4	12

INPUT



### BUY CRAY TOMORROW? (Central Region)



INPUT



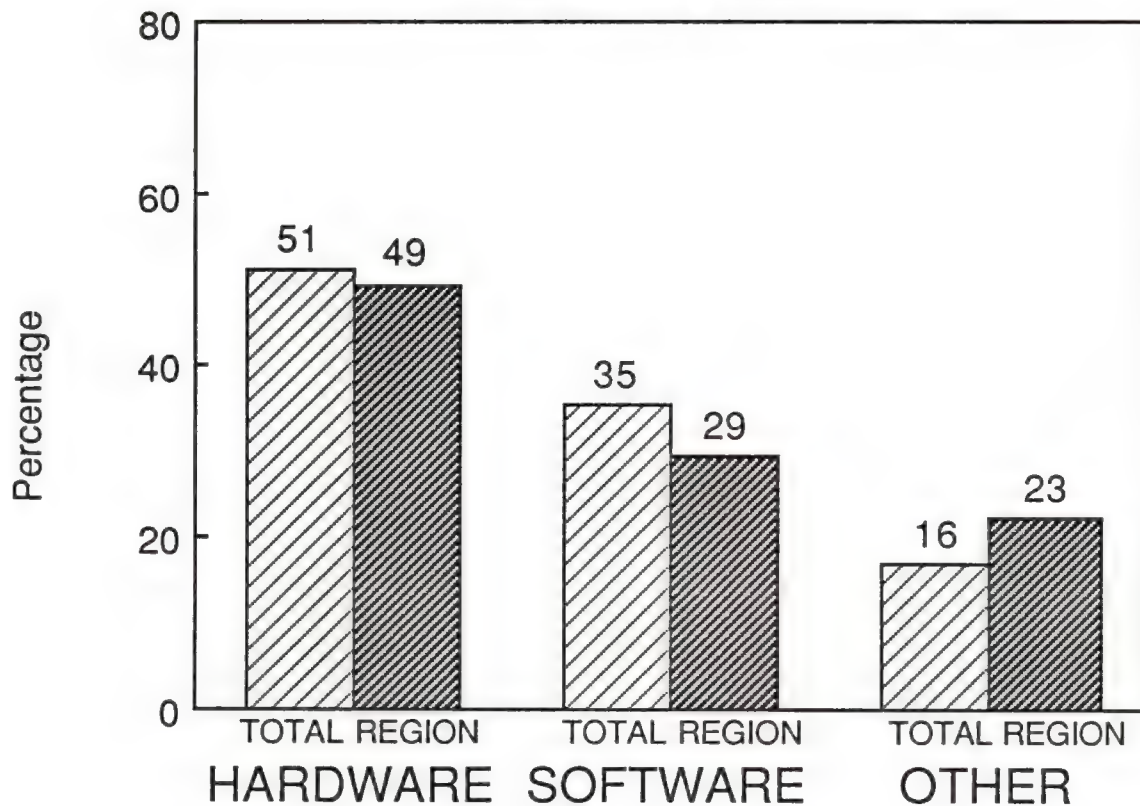
# **DECISION CRITERIA IF BUY TODAY** **(Central Region)**

<u>Rank</u>		<u>Decision Importance</u>	<u>Cray Rate</u>
1	Overall Sys. Performance	9.3	8.2
2	Sys. SW Reliability	8.9	6.5
3	Price Performance	8.8	6.6
3	Hardware Reliability	8.8	8.3
4	Network/Connectivity	8.7	6.8
4	Sys. SW Usability	8.7	7.0
5	SW Maint. Support	8.3	7.0
5	Sys. SW Functionality	8.3	5.9
6	Sys. SW Performance	8.2	7.1
7	Overall System Price	8.0	6.2
8	Conversion Ease	7.4	7.3
8	Documentation	7.4	6.5
9	Application Software Avail.	6.8	6.9
10	Training	6.7	6.6

INPUT



## SYSTEM OUTAGE BY CAUSE (Central Region)



### Q7A. B. C: HARDWARE, SOFTWARE AND OTHER INTERRUPTION

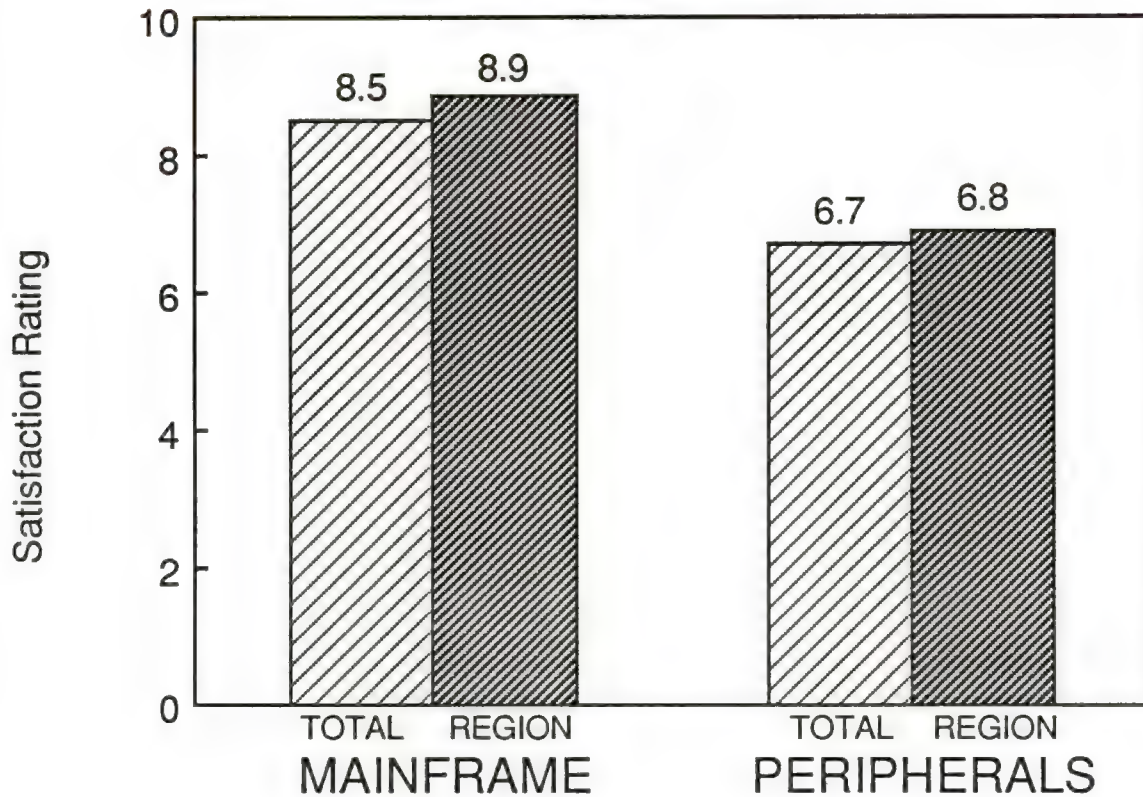
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
HARDWARE					
TOTAL—1988	51	8	100	26.9	77
REGIONAL—1988	49	11	100	33.1	10
SOFTWARE					
TOTAL—1988	35	0	85	24.2	74
REGIONAL—1988	29	7	60	20.0	10
OTHER					
TOTAL—1988	16	0	72	16.7	74
REGIONAL—1988	23	3	72	23.6	10

INPUT





# **HARDWARE SATISFACTION MAINFRAME/PERIPHERALS (Central Region)**



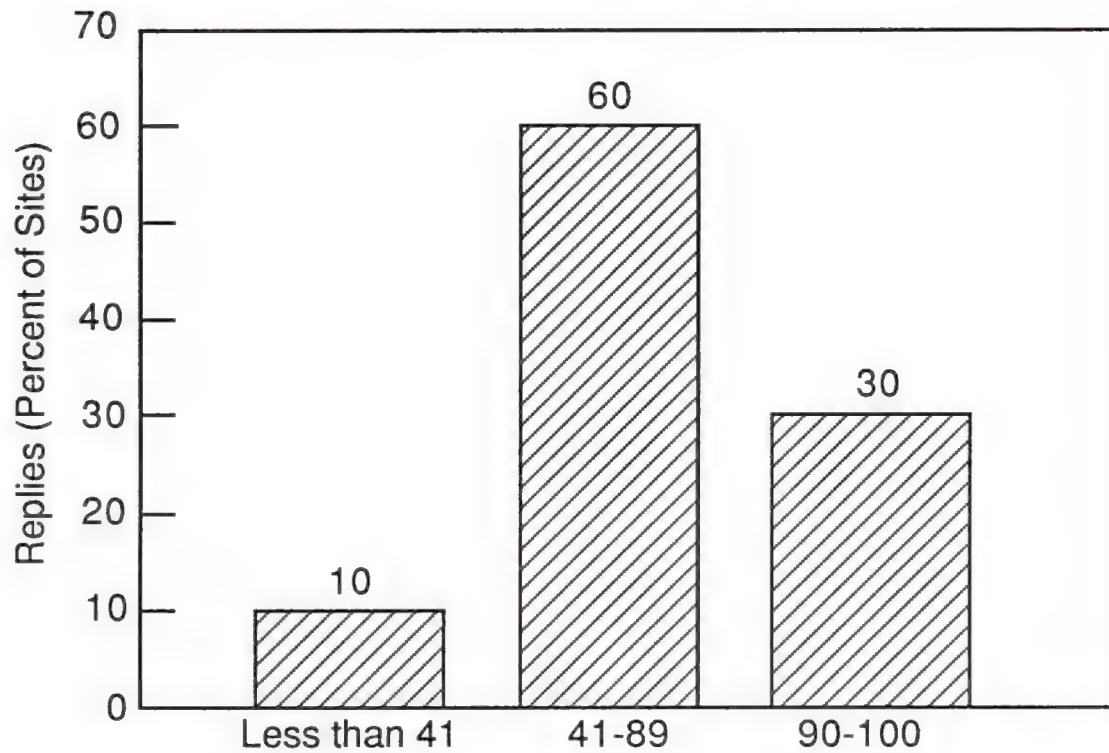
## Q10A. B: MAINFRAME/PERIPHERAL RELIABILITY

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
MAINFRAME					
TOTAL—1988	8.5	2	10	1.4	83
REGIONAL—1988	8.9	6	10	1.2	11
PERIPHERALS					
TOTAL—1988	6.7	1	10	2.3	83
REGIONAL—1988	6.8	2	10	2.5	11

INPUT



## UTILIZATION PROFILE (Central Region)

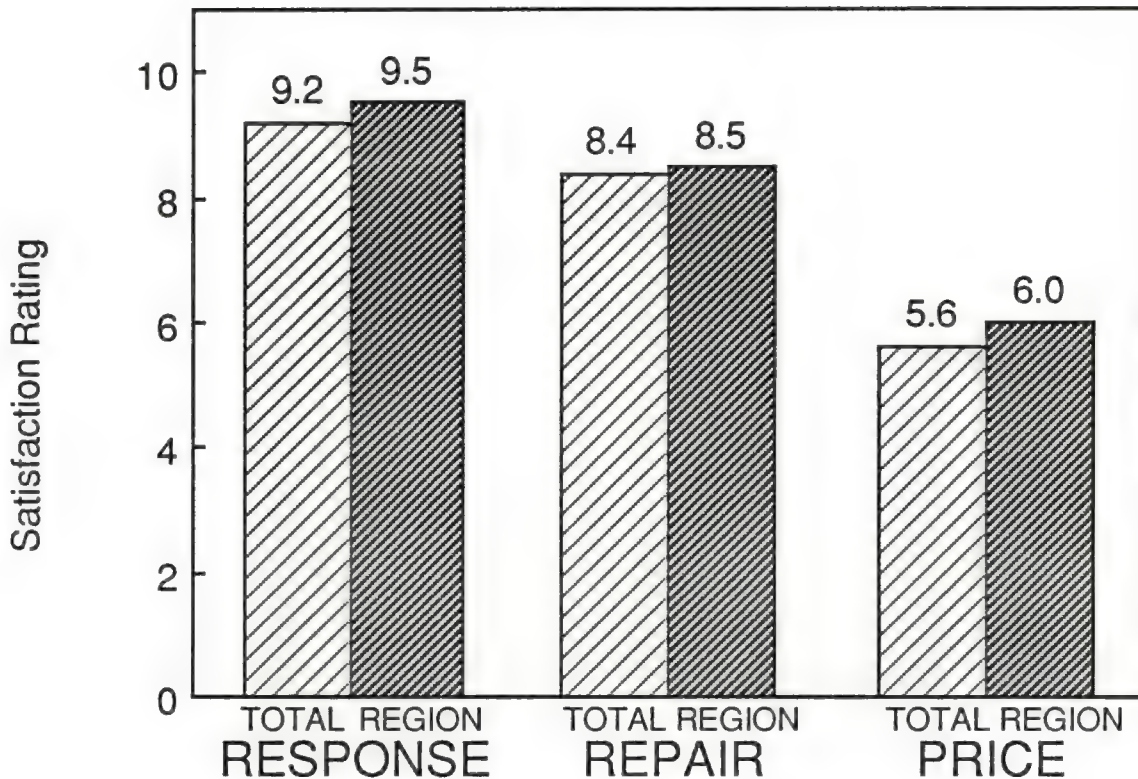


Q6: Average Monthly Utilization for Past 6 Months

INPUT



## MAINTENANCE RESPONSE SATISFACTION (Central Region)



### Q10C. D. E: HARDWARE MAINTENANCE, RESPONSE, REPAIR TIME AND PRICE

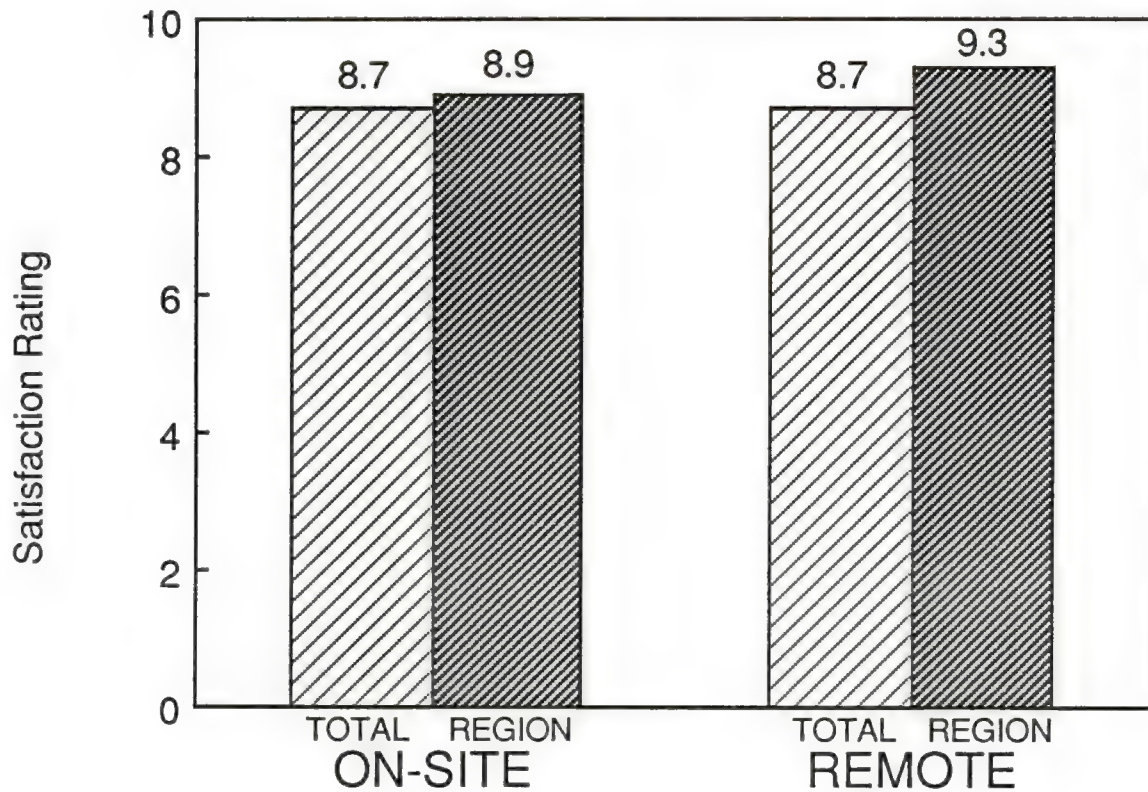
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RESPONSE					
TOTAL—1988	9.2	6	10	0.9	83
REGIONAL—1988	9.5	8	10	0.8	11
REPAIR					
TOTAL—1988	8.4	3	10	1.6	82
REGIONAL—1988	8.5	5	10	1.6	11
PRICE					
TOTAL—1988	5.6	1	10	2.5	74
REGIONAL—1988	6.0	4	10	1.8	9

INPUT





## ENGINEER SKILL LEVEL (Central Region)



### Q12E.F: CUSTOMER ENGINEER SKILL LEVEL RATINGS

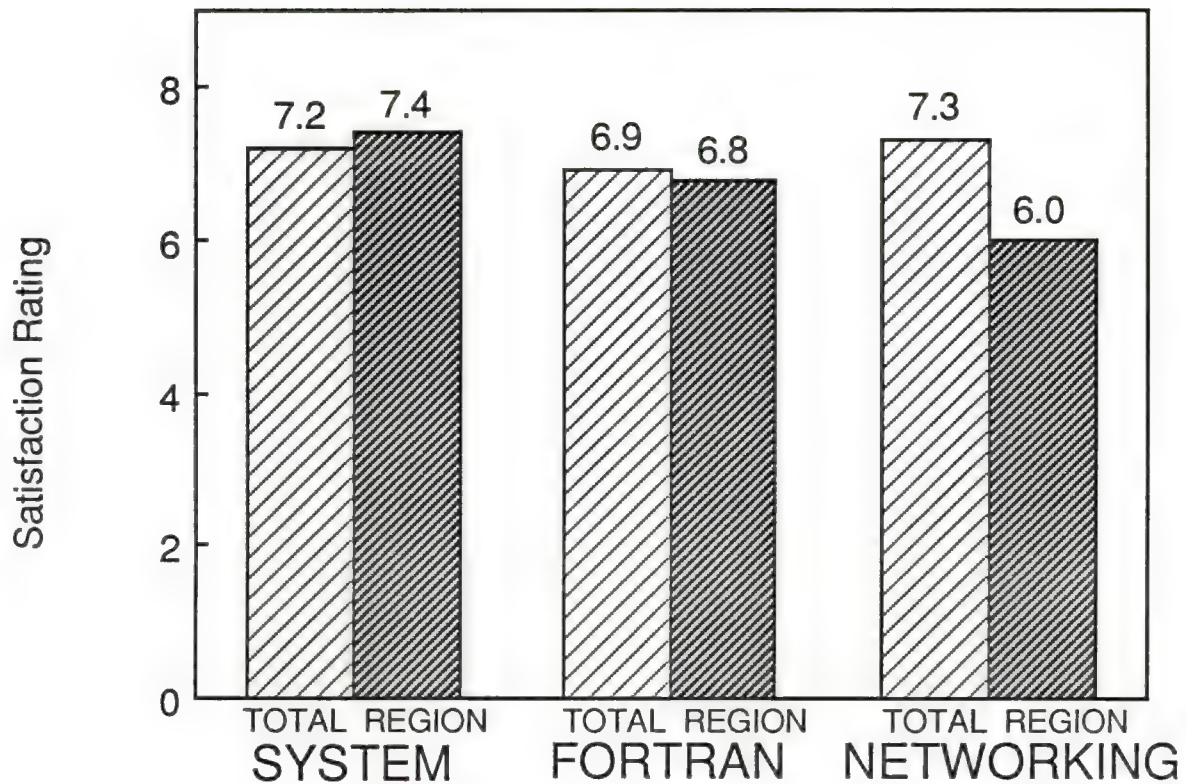
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
ON-SITE					
TOTAL—1988	8.7	6	10	1.2	88
REGIONAL—1988	8.9	6	10	1.5	11
REMOTE					
TOTAL—1988	8.7	5	10	1.4	75
REGIONAL—1988	9.3	8	10	0.9	9

INPUT





## SOFTWARE RELIABILITY (Central Region)



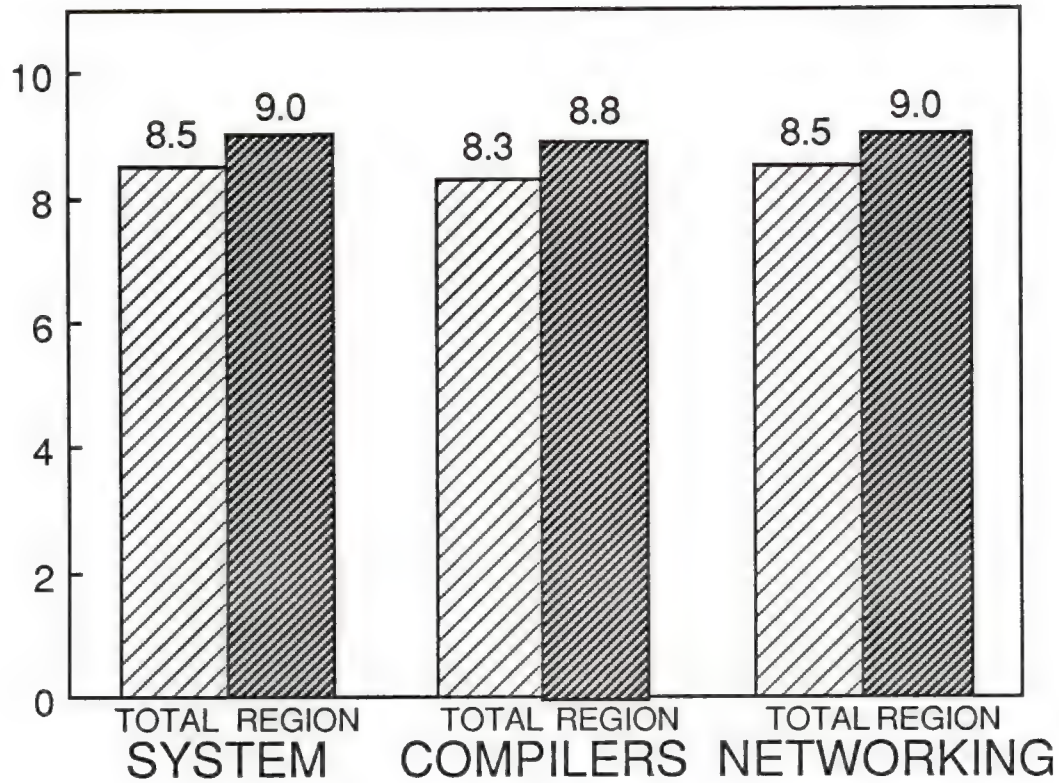
### Q13A. B. D: SYSTEM SOFTWARE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	7.2	1	10	2.0	78
REGIONAL—1988	7.4	4	10	1.9	9
COMPILERS (Fortran)					
TOTAL—1988	6.9	3	10	1.7	81
REGIONAL—1988	6.8	4	10	1.8	11
NETWORKING					
TOTAL—1988	7.3	3	10	2.0	26
REGIONAL—1988	6.0	3	8	2.6	3

INPUT



# SOFTWARE SUPPORT RATINGS LOCAL SITE SUPPORT (Central Region)



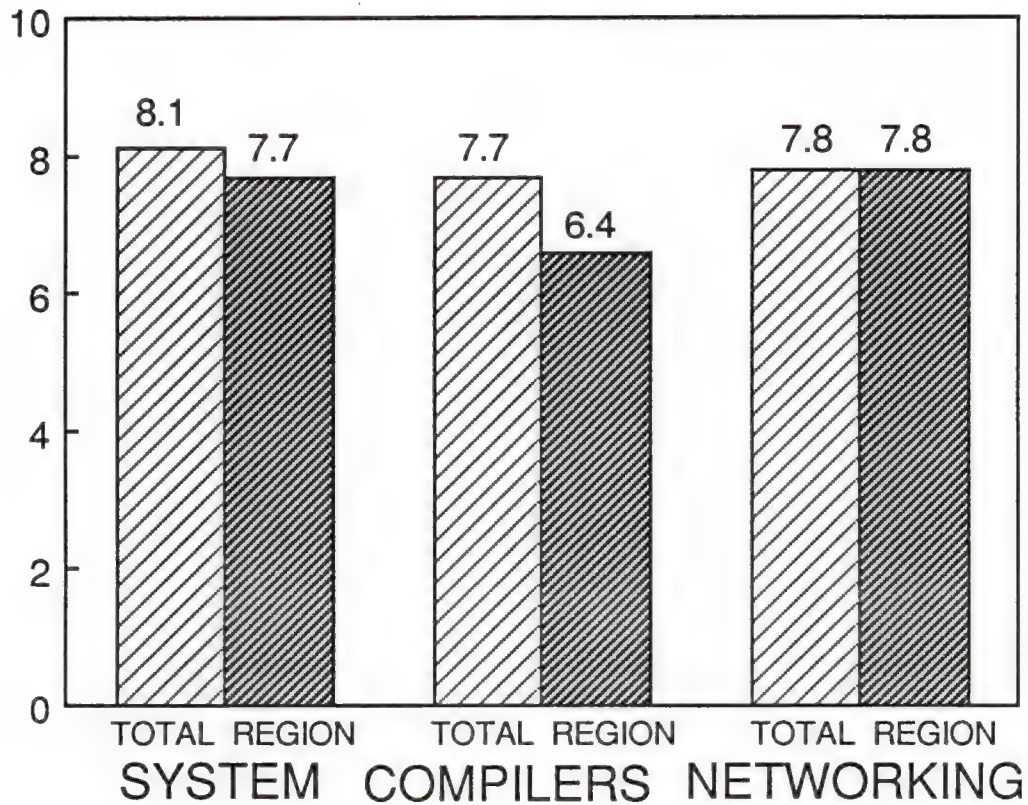
## Q18A, B, D: SOFTWARE SUPPORT RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	8.5	3	10	1.7	75
REGIONAL—1988	9.0	7	10	1.1	10
COMPILERS (Fortran)					
TOTAL—1988	8.3	3	10	1.8	72
REGIONAL—1988	8.8	7	10	1.2	12
NETWORKING					
TOTAL—1988	8.5	3	10	1.9	35
REGIONAL—1988	9.0	8	10	0.8	4

INPUT



## SOFTWARE SUPPORT RATINGS FIELD SUPPORT (Central Region)



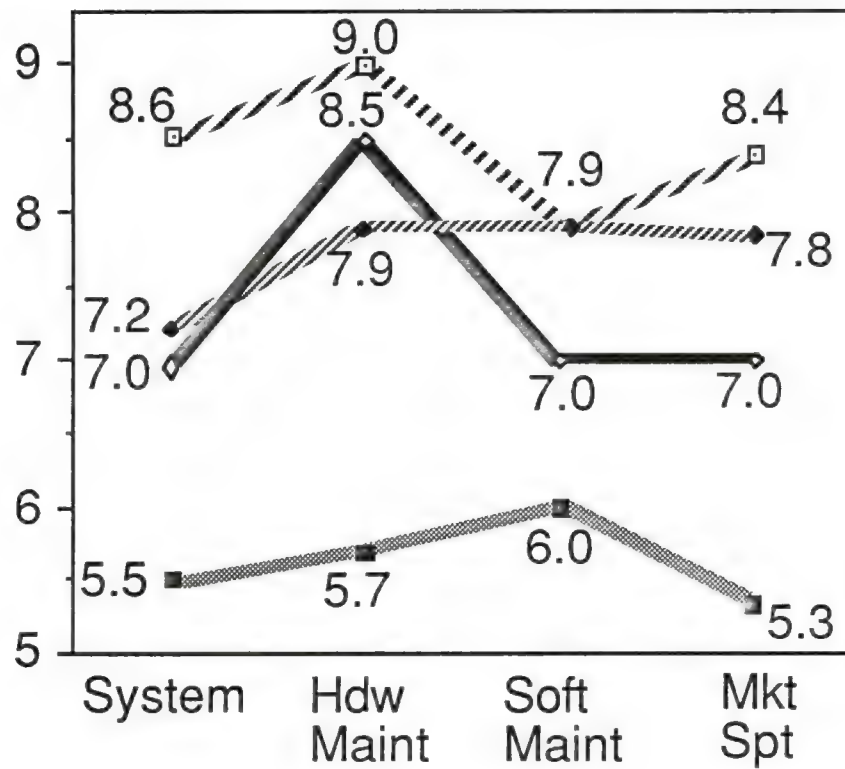
### Q18A,B,D: SOFTWARE SUPPORT RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SOFTWARE					
TOTAL—1988	8.1	4	10	1.4	47
REGIONAL—1988	7.7	5	10	1.7	7
COMPILERS (FORTRAN)					
TOTAL—1988	7.7	3	10	1.6	46
REGIONAL—1988	6.4	3	9	2.2	9
NETWORKING					
TOTAL—1988	7.8	4	10	1.5	24
REGIONAL—1988	7.8	6	10	1.7	4

INPUT



## VENDOR COMPARISONS (Central Region)



----- Cray  
..... IBM  
..... DEC  
————— CDC

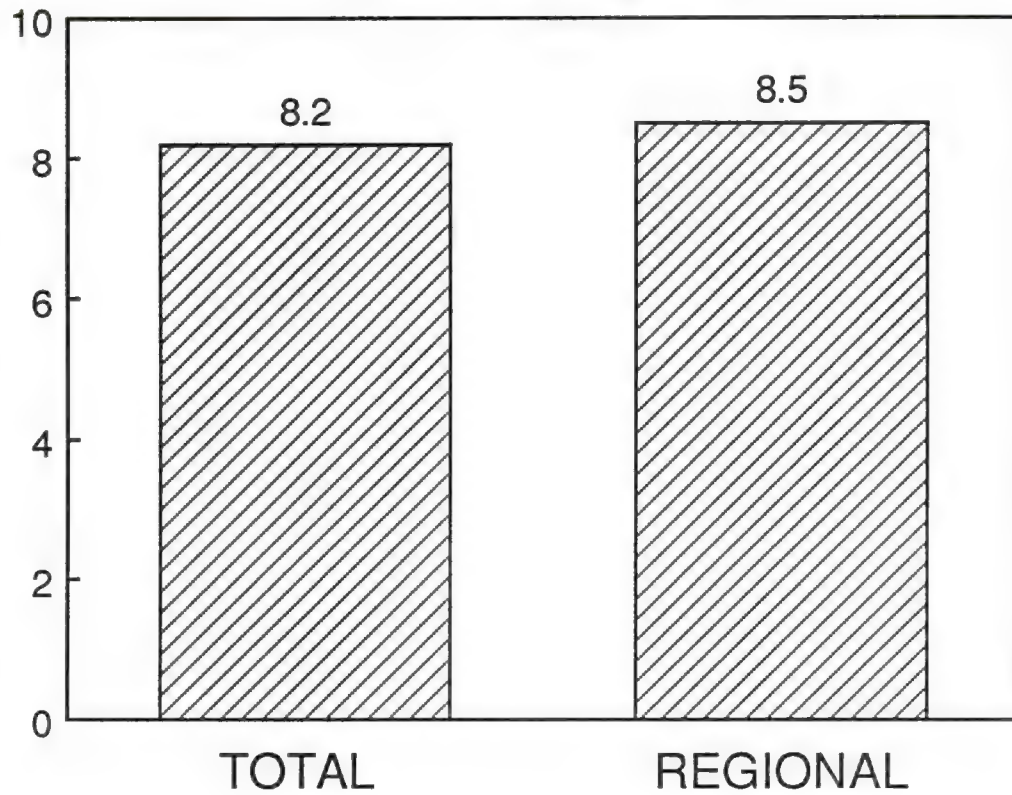
INPUT







# MARKETING REPRESENTATIVE HELPLEFULNESS (Central Region)



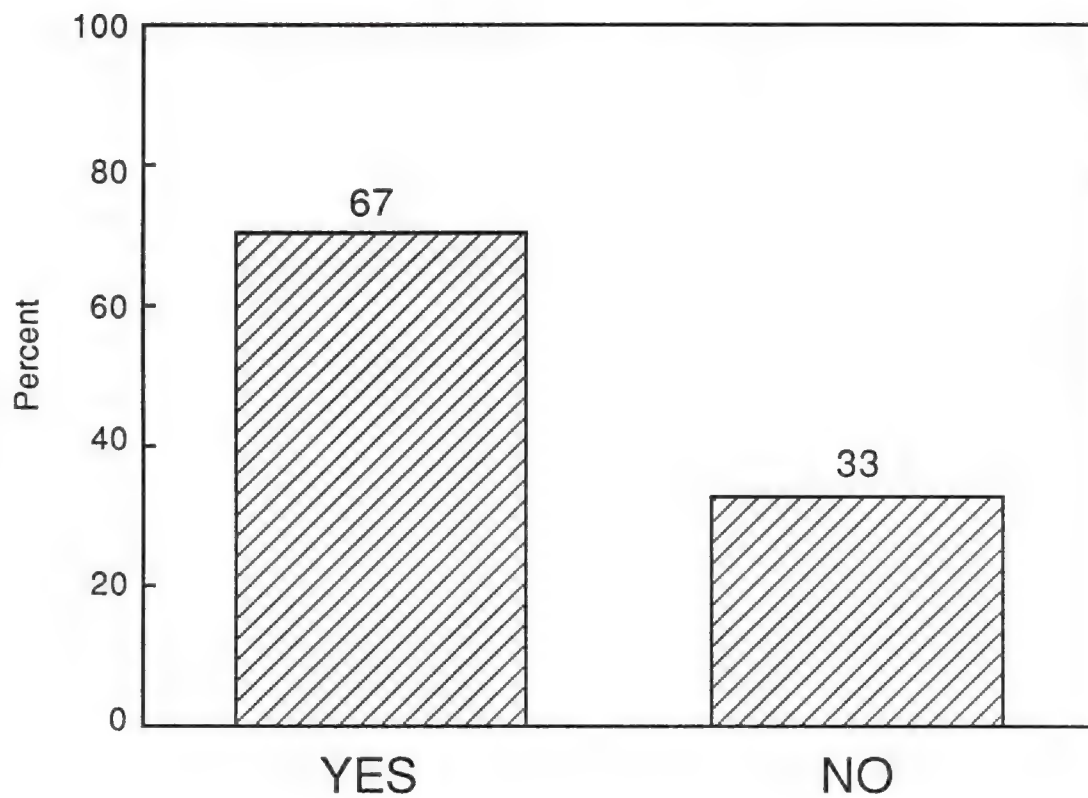
## Q28D: HELPLEFULNESS OF CRAY LOCAL MARKETING REPRESENTATIVE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.2	3	10	1.7	80
REGION—1988	8.5	5	10	1.4	11

INPUT

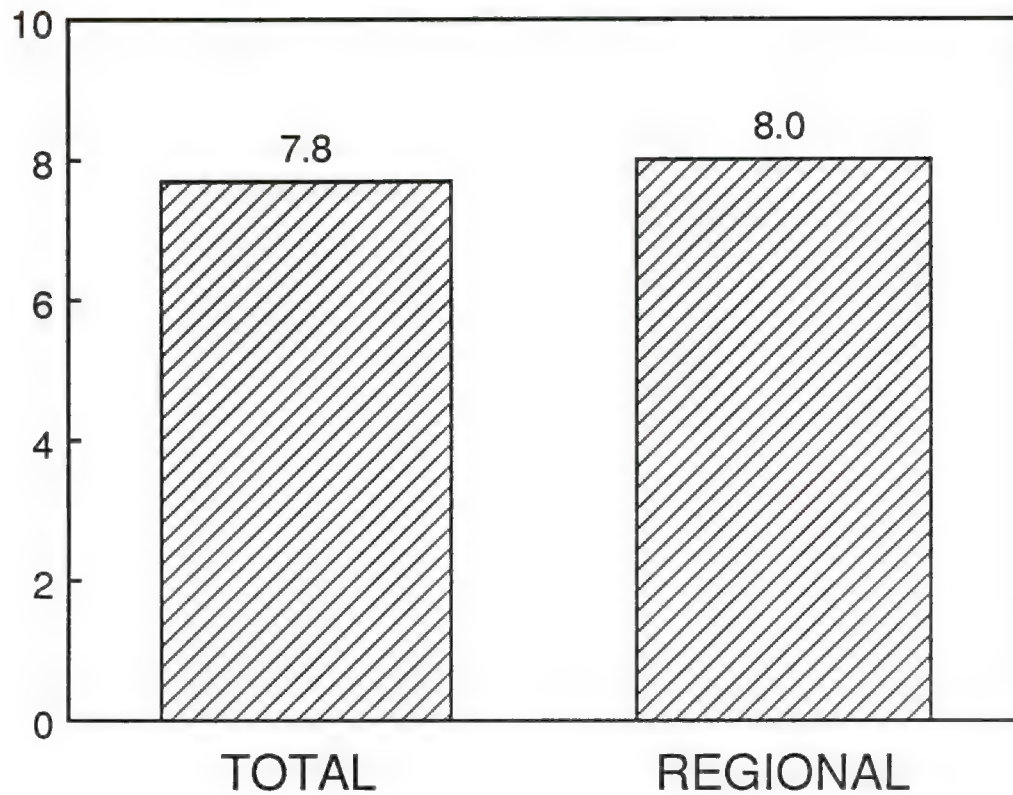


**KEPT AWARE ENOUGH OF CRAY'S  
HARDWARE/SOFTWARE DIRECTIONS (Q29)  
(Central Region)**





## USER SATISFACTION WITH SYSTEM (Central Region)



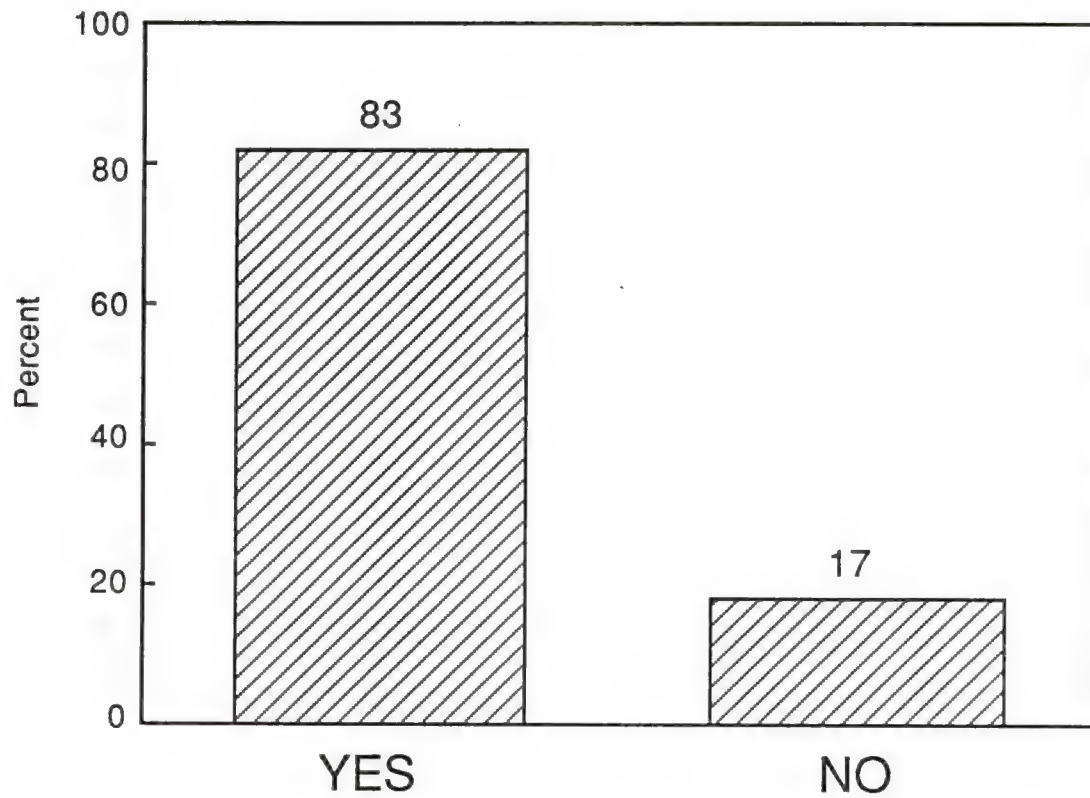
### Q32B: HOW DO USERS RATE SATISFACTION WITH SYSTEM?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	7.8	3	10	1.3	79
REGION—1988	8.0	7	10	1.1	11

INPUT



**ENOUGH INTERACTION WITH CRAY  
CORPORATE MANAGEMENT (Q28G)  
(Central Region)**

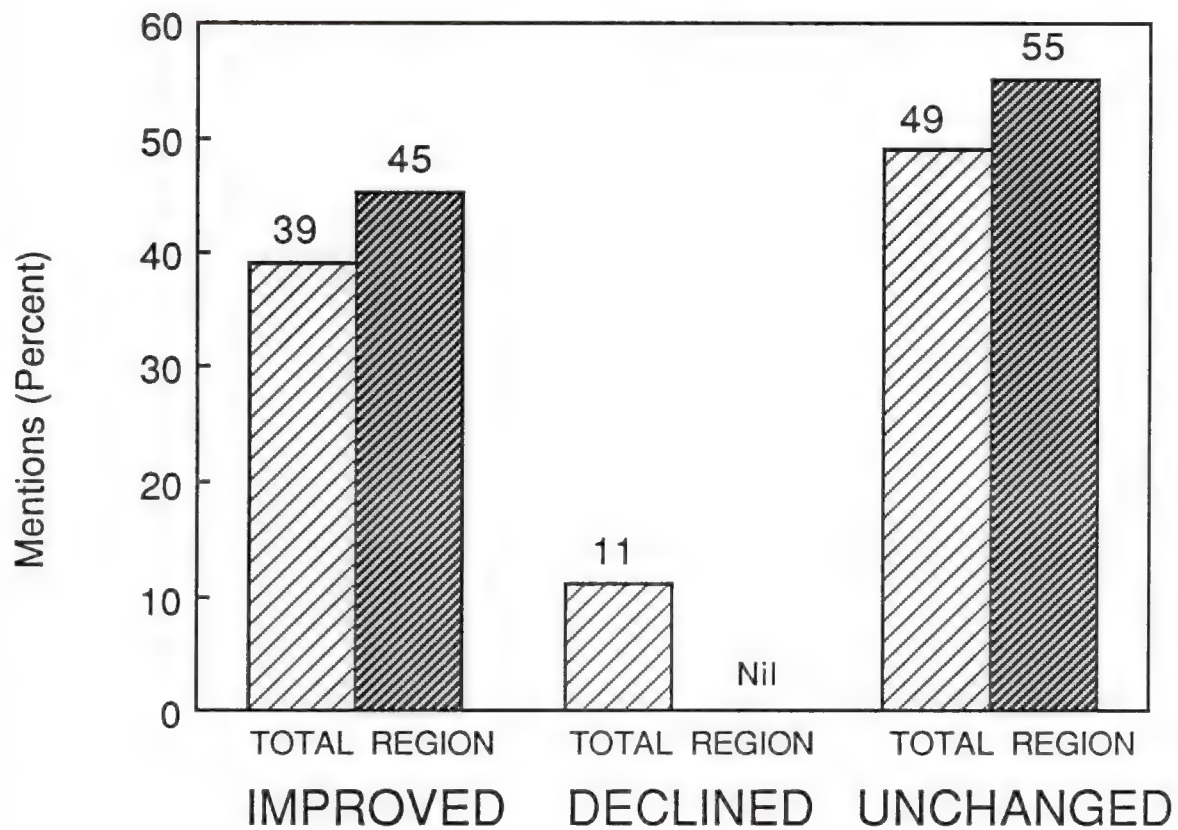


INPUT





# OVERALL SATISFACTION IMPROVED/DECLINED/UNCHANGED (Central Region)



INPUT

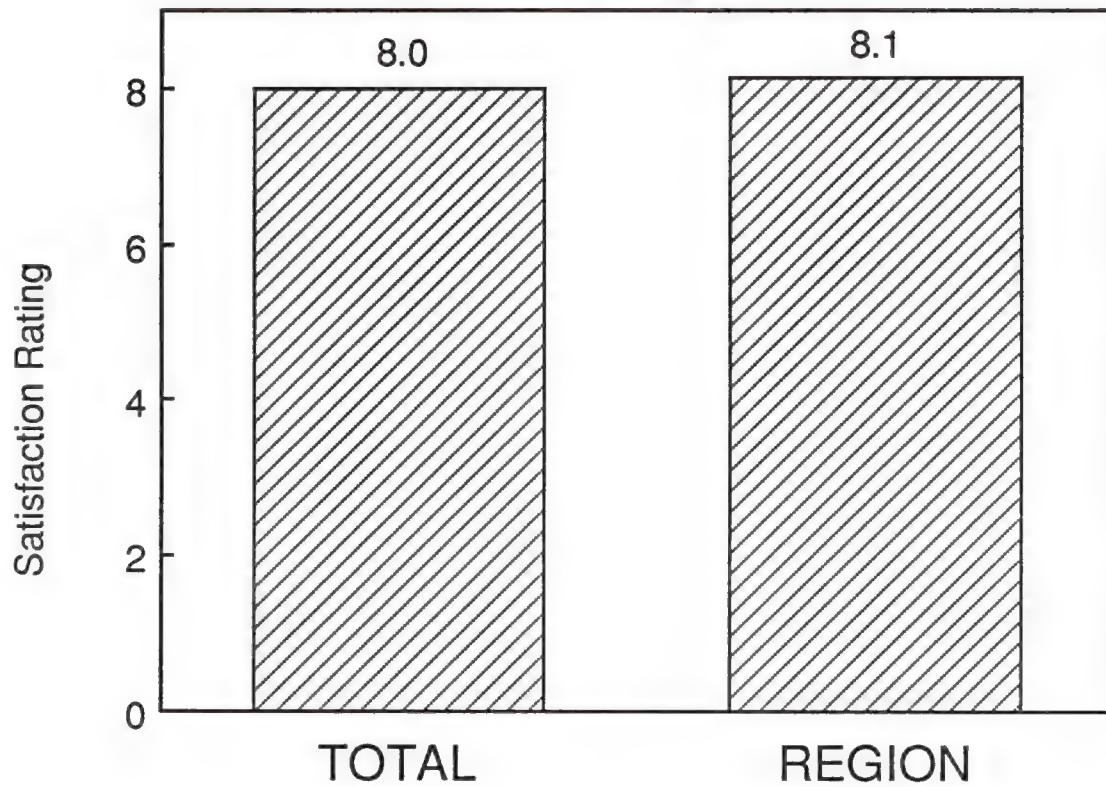


# **EASTERN REGION**

INPUT



## CRAY LIVING UP TO EXPECTATIONS (Eastern Region)



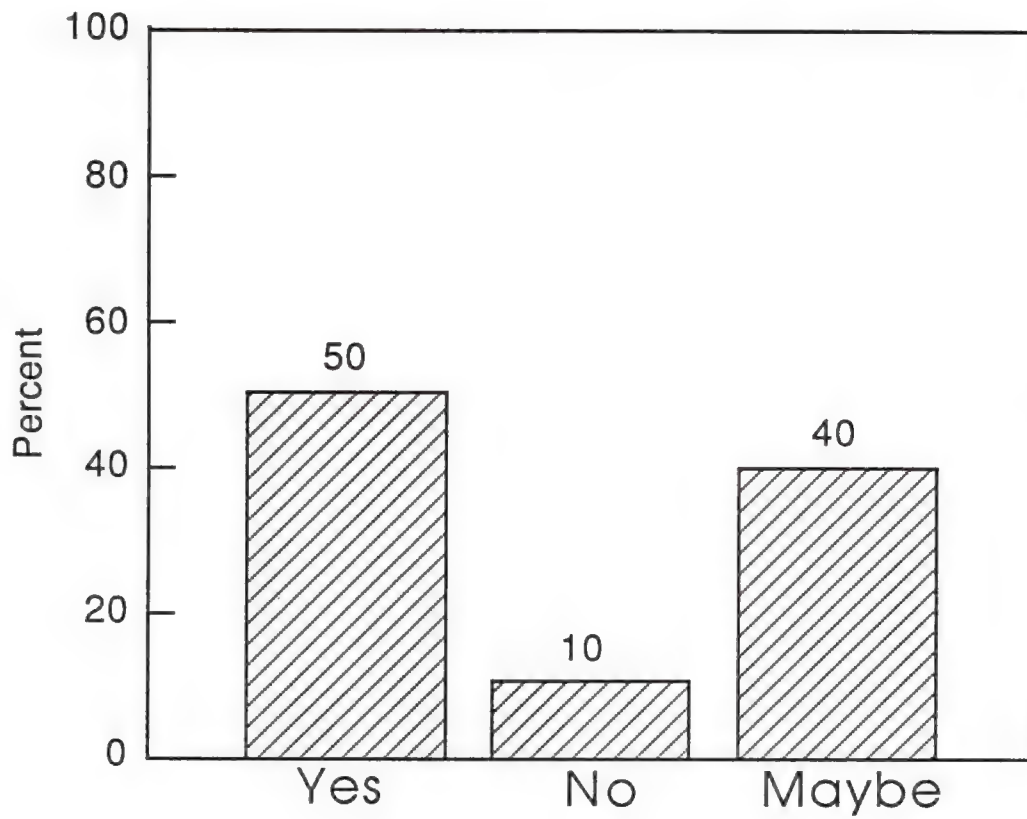
Q25: HOW WELL IS CRAY SYSTEM LIVING UP TO YOUR EXPECTATIONS?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.0	2	10	1.6	82
REGION—1988	8.1	4	10	1.6	20

INPUT



## BUY CRAY TOMORROW? (Eastern Region)



INPUT





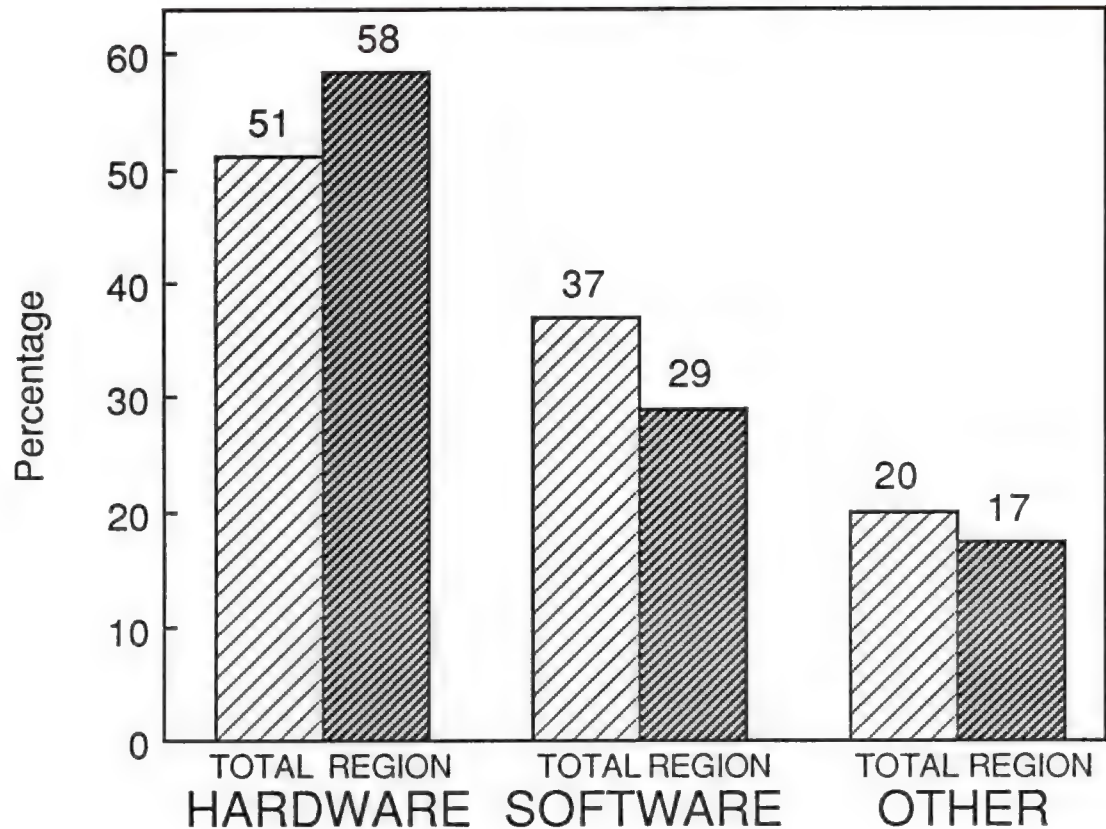
**DECISION CRITERIA IF BUY TODAY**  
**(Eastern Region)**

<u>Rank</u>		<u>Decision Importance</u>	<u>Cray Rate</u>
1	Overall Sys. Performance	9.0	8.7
2	Sys. SW Reliability	8.8	7.3
3	Hardware Reliability	8.8	8.1
4	Price Performance	8.7	7.5
5	Network/Connectivity	8.5	7.5
6	Sys. SW Functionality	8.2	7.2
7	Overall System Price	8.1	6.9
7	SW Maint. Support	8.1	8.3
8	Sys. SW Performance	7.9	7.5
9	Sys. SW Usability	7.8	7.3
10	Conversion Ease	7.6	7.0
11	Documentation	7.2	6.3
12	Application Software Avail.	7.1	7.6
13	Training	6.0	6.8

INPUT



## SYSTEM OUTAGE BY CAUSE (Eastern Region)



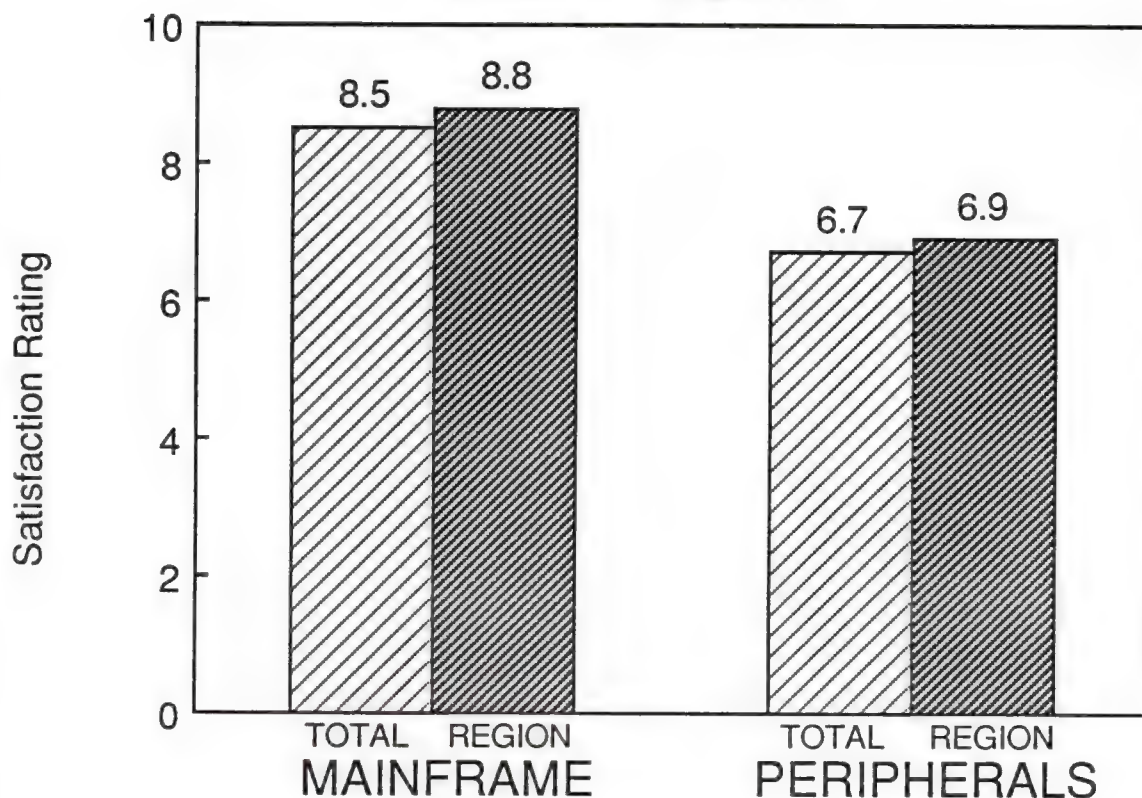
### Q7A, B, C: HARDWARE, SOFTWARE AND OTHER INTERRUPTION

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
HARDWARE					
TOTAL—1988	51	8	100	26.9	76
REGIONAL—1988	58	21	100	24.0	17
SOFTWARE					
TOTAL—1988	37	1	85	24.2	73
REGIONAL—1988	29	5	71	20.7	15
OTHER					
TOTAL—1988	20	2	72	16.7	59
REGIONAL—1988	17	0	60	18.7	16

INPUT



## HARDWARE SATISFACTION MAINFRAME/PERIPHERALS (Eastern Region)



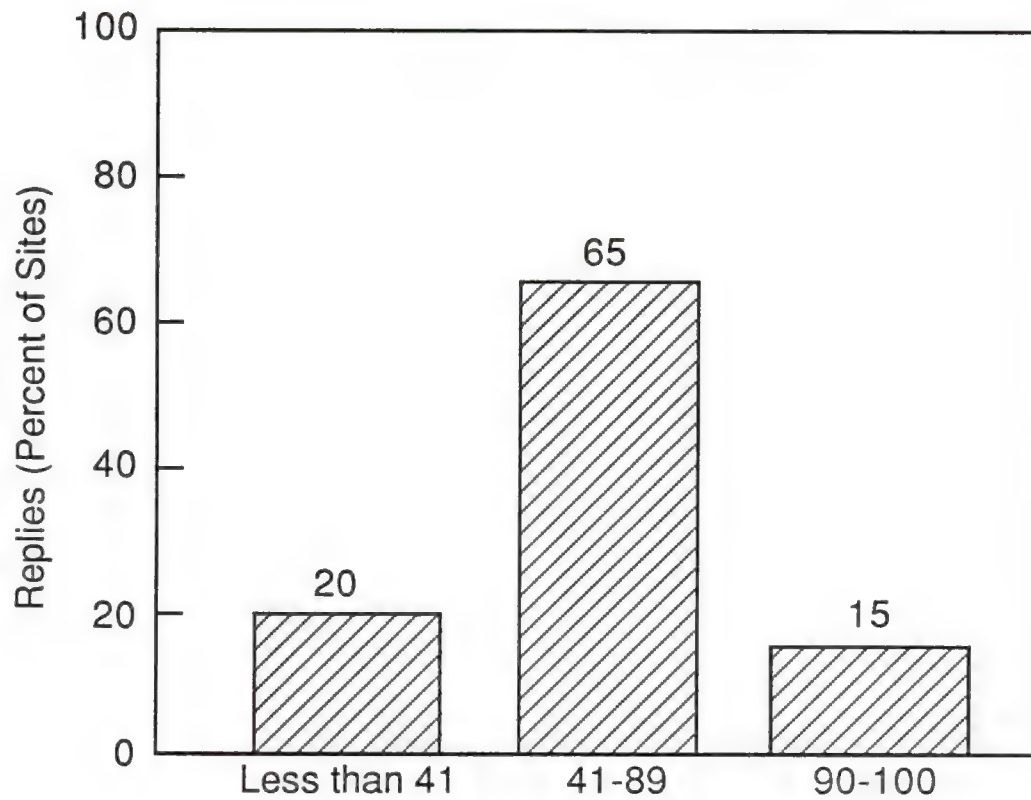
### Q10A. B: MAINFRAME/PERIPHERAL RELIABILITY

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
MAINFRAME					
TOTAL—1988	8.5	2	10	1.4	83
REGIONAL—1988	8.8	7	10	1.0	20
PERIPHERALS					
TOTAL—1988	6.7	1	10	2.3	83
REGIONAL—1988	6.9	4	10	1.9	20

INPUT



## UTILIZATION PROFILE (Eastern Region)



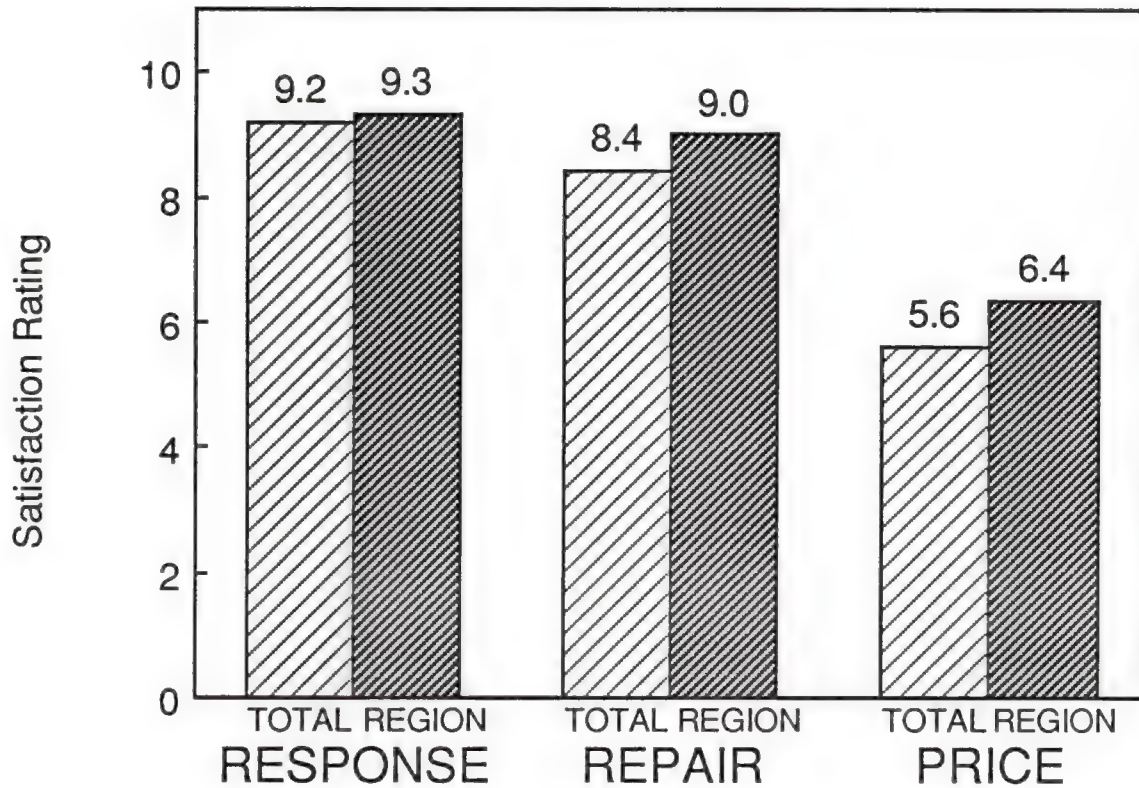
Q6: Average Monthly Utilization for Past 6 Months

INPUT





## MAINTENANCE RESPONSE SATISFACTION (Eastern Region)



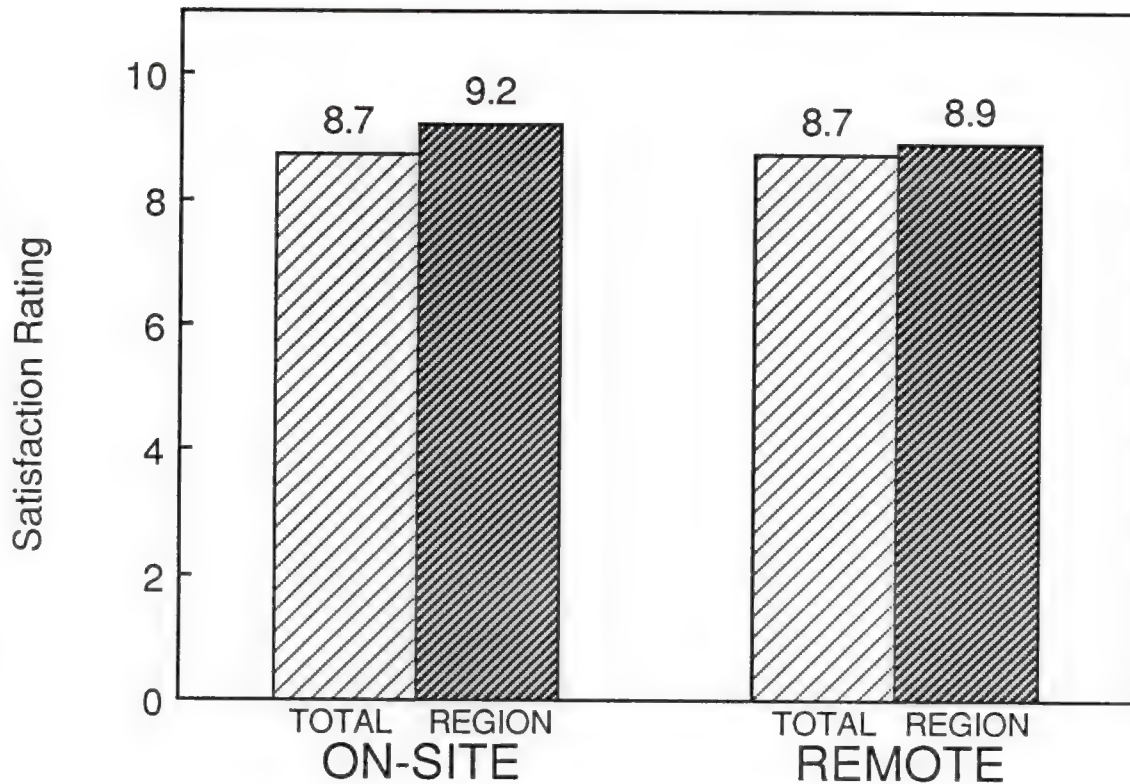
### Q10C. D. E: HARDWARE MAINTENANCE, RESPONSE, REPAIR TIME AND PRICE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RESPONSE					
TOTAL—1988	9.2	6	10	0.9	83
REGIONAL—1988	9.3	7	10	0.8	20
REPAIR					
TOTAL—1988	8.4	3	10	1.6	82
REGIONAL—1988	9.0	6	10	1.1	20
PRICE					
TOTAL—1988	5.6	1	10	2.5	74
REGIONAL—1988	6.4	1	8	2.0	17

INPUT



## ENGINEER SKILL LEVEL (Eastern Region)



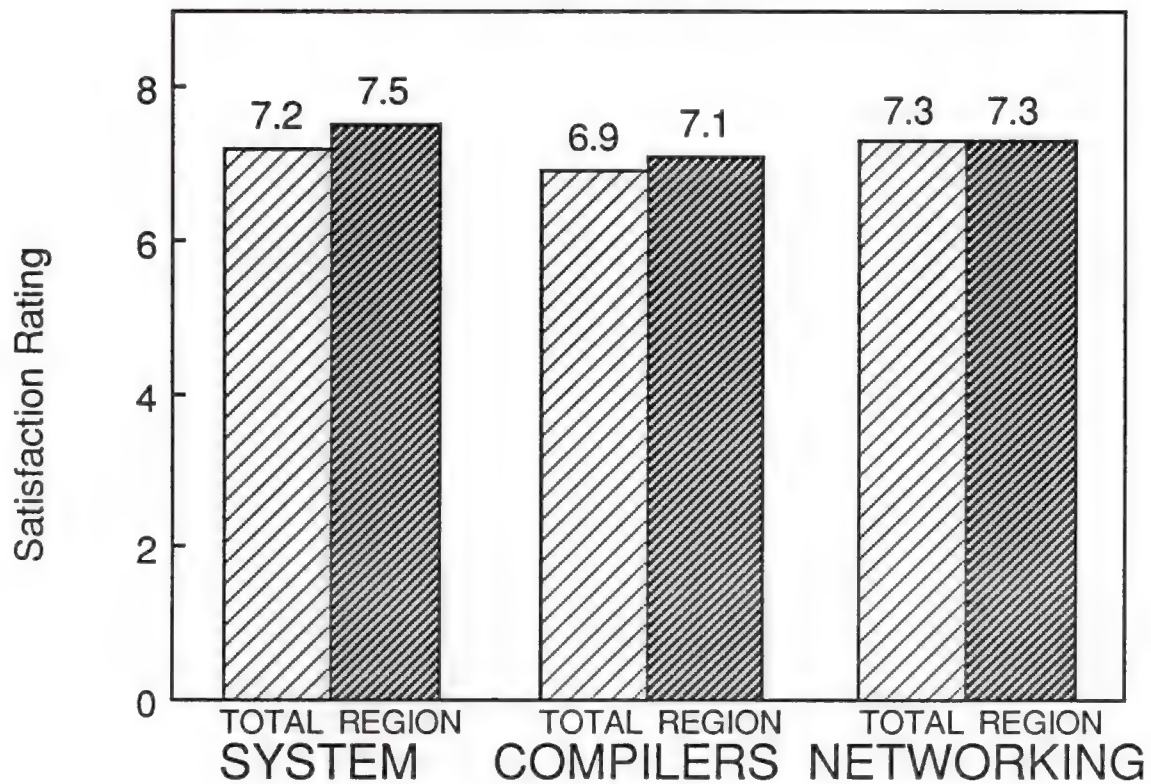
Q12E.F: CUSTOMER ENGINEER SKILL LEVEL RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
ON-SITE					
TOTAL—1988	8.7	6	10	1.2	87
REGIONAL—1988	9.2	7	10	0.9	20
REMOTE					
TOTAL—1988	8.7	5	10	1.1	75
REGIONAL—1988	8.9	5	10	1.2	17

INPUT



## SOFTWARE RELIABILITY (Eastern Region)



### Q13A. B. D: SYSTEM SOFTWARE

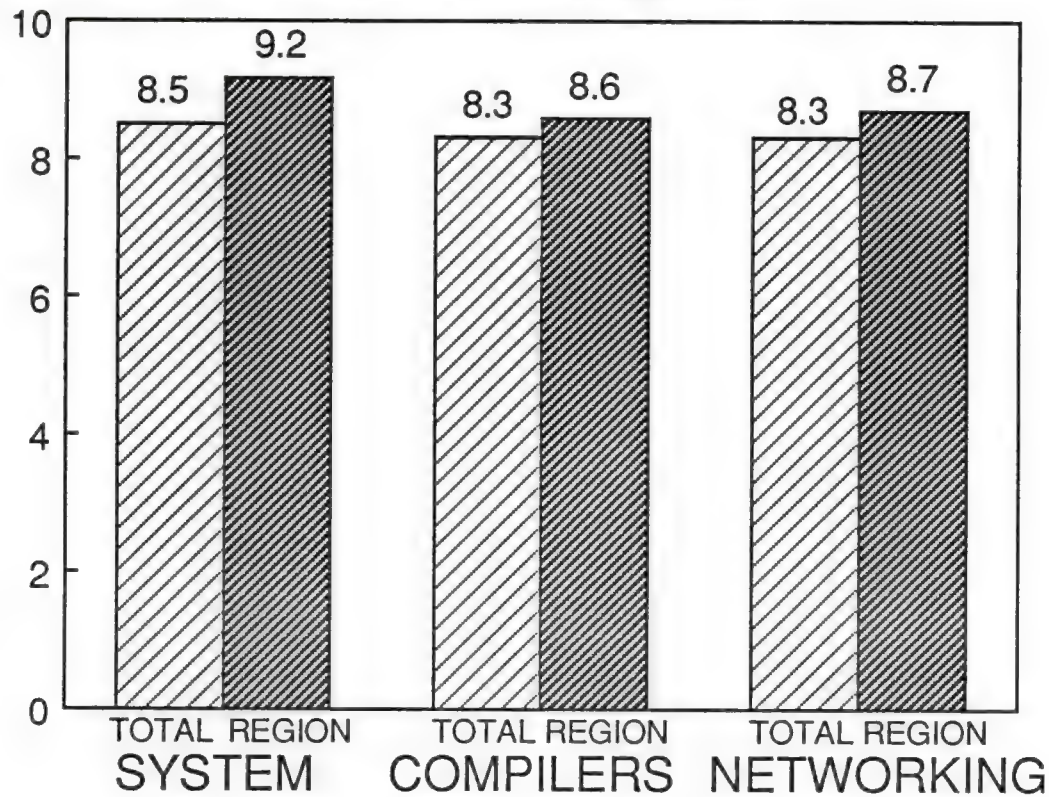
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	7.2	1	10	2.0	78
REGIONAL—1988	7.5	3	10	1.9	19
COMPILERS (Fortran)					
TOTAL—1988	6.9	3	10	1.7	81
REGIONAL—1988	7.1	3	10	2.0	19
NETWORKING					
TOTAL—1988	7.3	3	10	2.0	26
REGIONAL—1988	7.3	4	10	1.6	8

INPUT





# SOFTWARE SUPPORT RATINGS LOCAL SITE SUPPORT (Eastern Region)



Q18A. B. D: SOFTWARE SUPPORT RATINGS

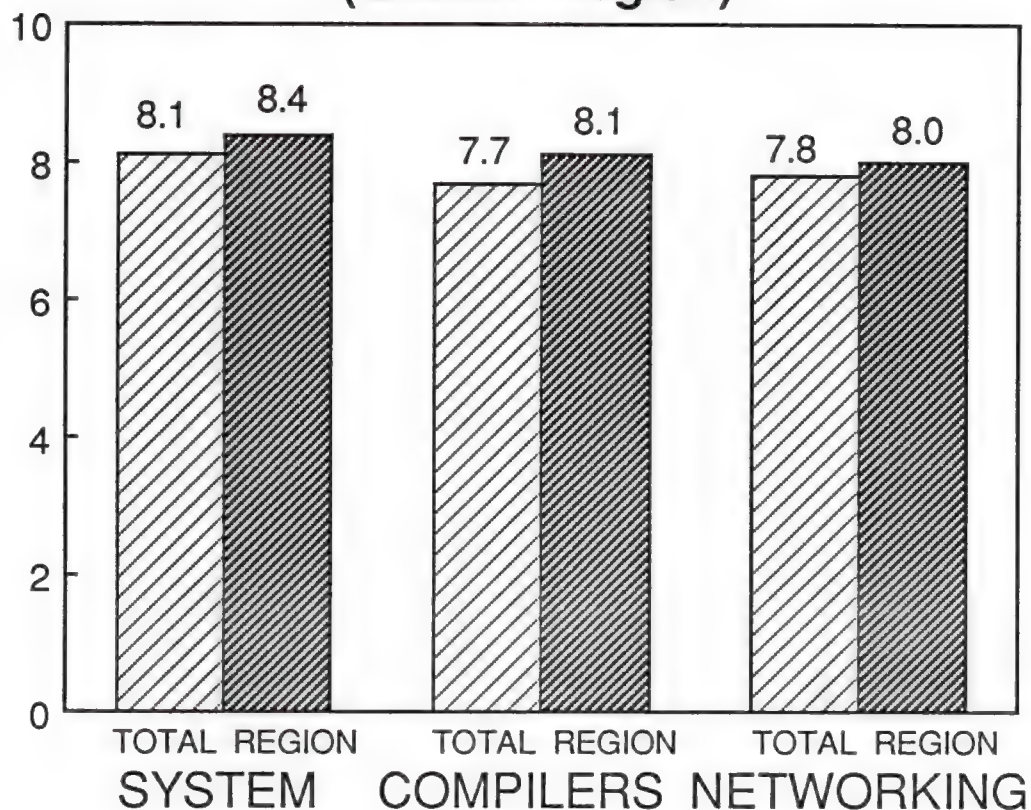
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	8.5	3	10	1.7	75
REGIONAL—1988	9.2	7	10	0.9	19
COMPILED (Fortran)					
TOTAL—1988	8.3	3	10	1.8	72
REGIONAL—1988	8.6	4	10	1.7	18
NETWORKING					
TOTAL—1988	8.3	3	10	1.9	35
REGIONAL—1988	8.7	4	10	1.9	10

INPUT





## SOFTWARE SUPPORT RATINGS FIELD SUPPORT (Eastern Region)



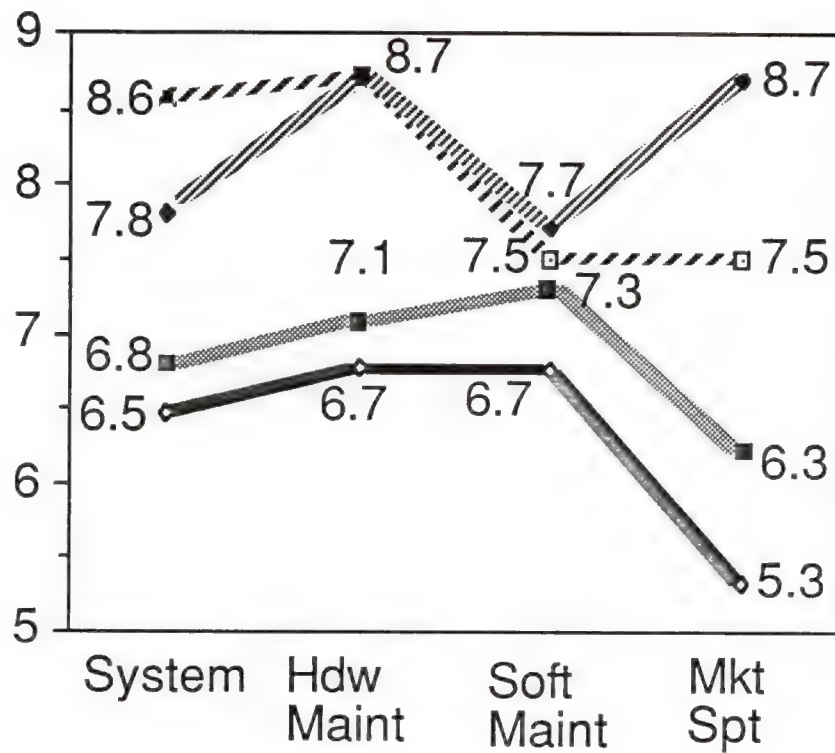
### Q18A,B,D: SOFTWARE SUPPORT RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SOFTWARE					
TOTAL—1988	8.1	4	10	1.4	47
REGIONAL—1988	8.4	6	10	1.2	9
COMPILERS (FORTRAN)					
TOTAL—1988	7.7	3	10	1.6	46
REGIONAL—1988	8.1	6	10	1.1	9
NETWORKING					
TOTAL—1988	7.8	4	10	1.5	24
REGIONAL—1988	8.0	6	10	1.4	5

INPUT



## VENDOR COMPARISON (Eastern Region)

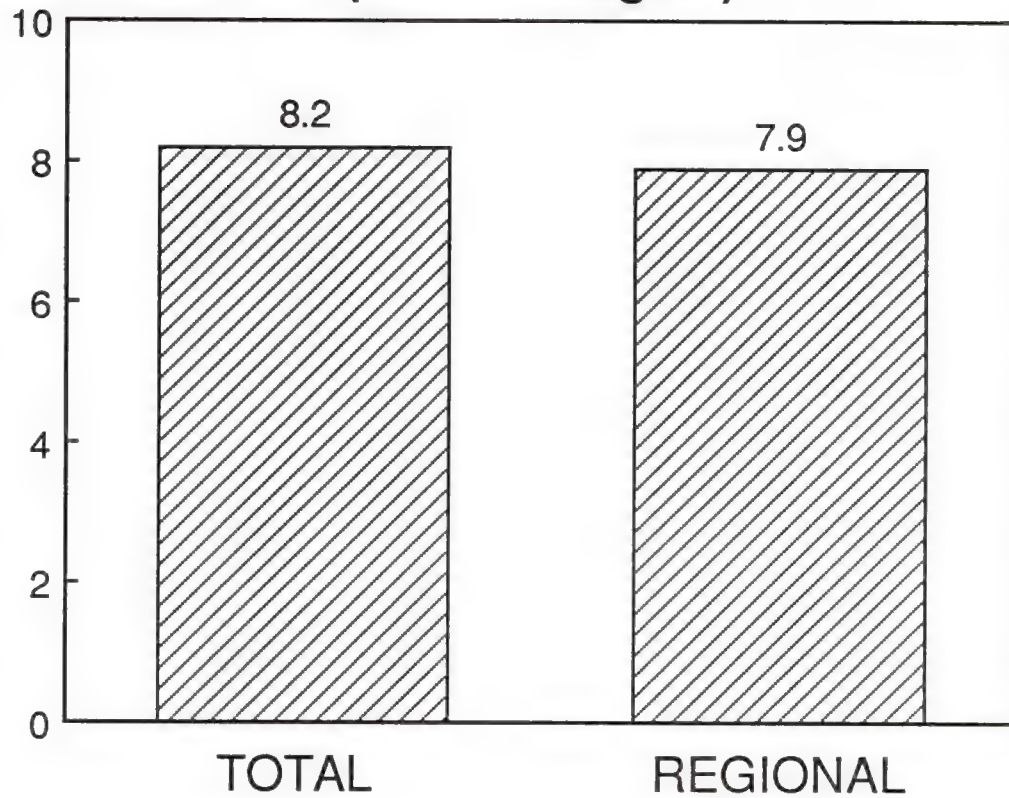


- - - - - Cray  
 / / / / / IBM  
 x x x x x DEC  
 ———— CDC

INPUT



# MARKETING REPRESENTATIVE HELPLEFULNESS (Eastern Region)



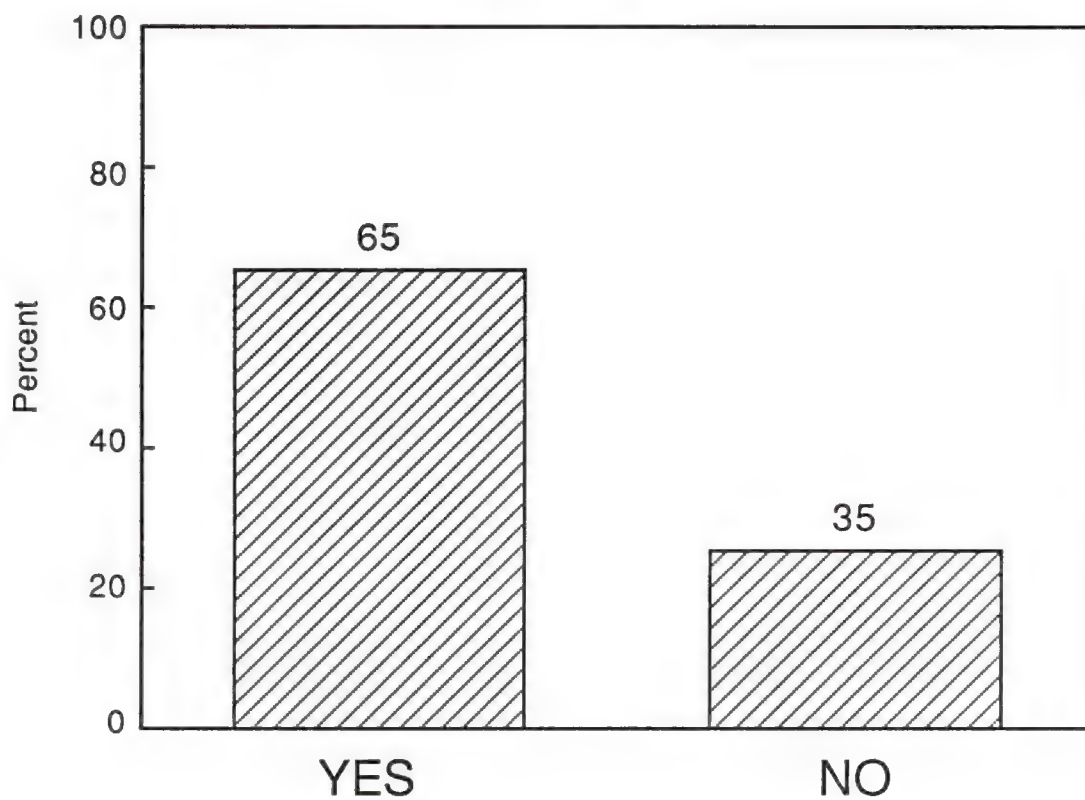
## Q28D: HELPLEFULNESS OF CRAY LOCAL MARKETING REPRESENTATIVE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.2	3	10	1.7	80
REGION—1988	7.9	4	10	1.7	20

INPUT



**KEPT AWARE ENOUGH OF CRAY'S  
HARDWARE/SOFTWARE DIRECTIONS (Q29)  
(Eastern Region)**

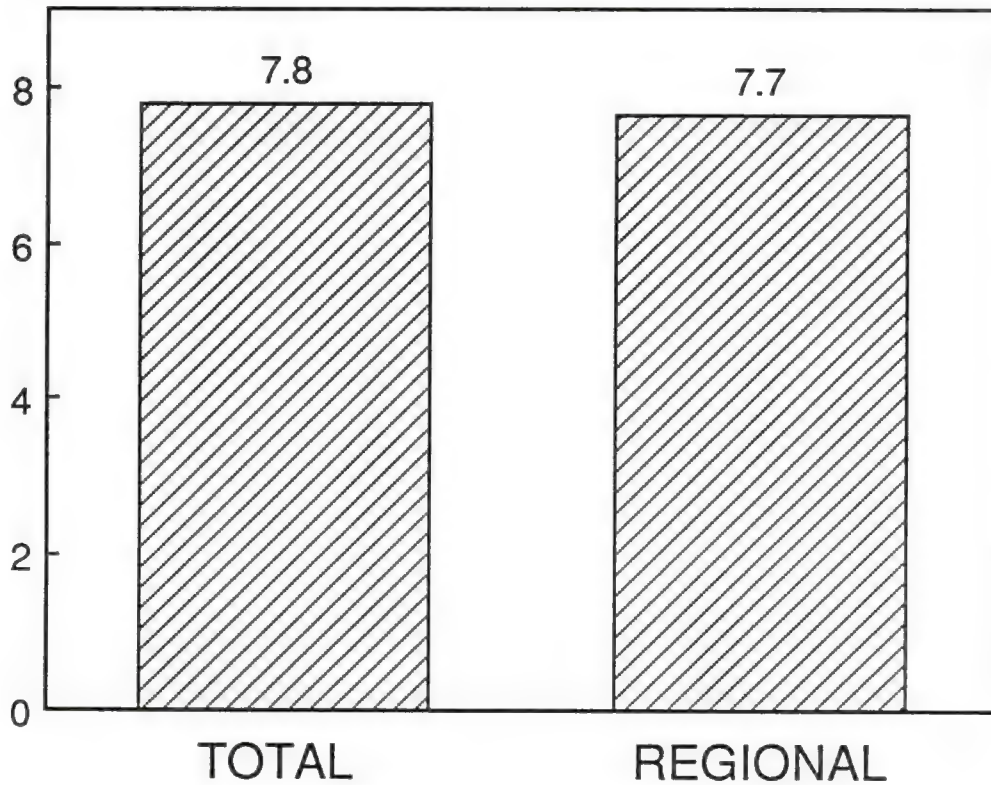


INPUT





## USER SATISFACTION WITH SYSTEM (Eastern Region)



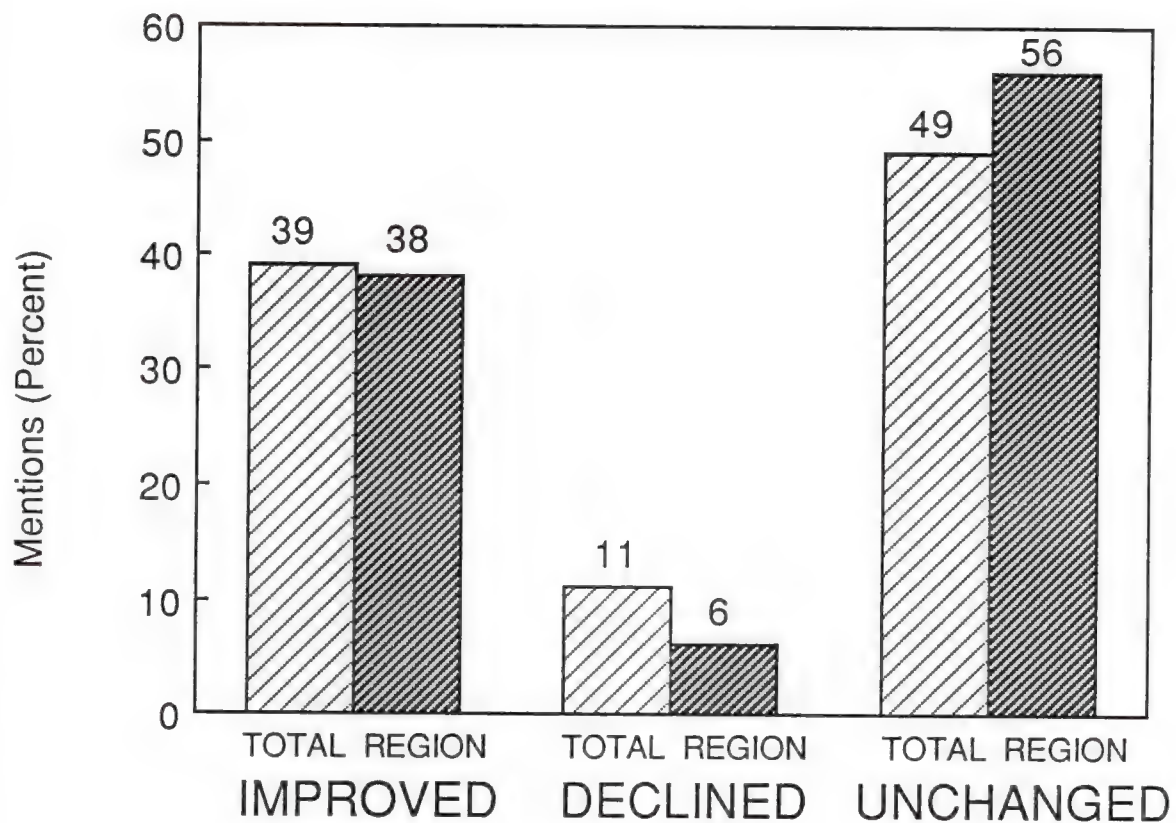
### Q32B: HOW DO USERS RATE SATISFACTION WITH SYSTEM?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	7.8	3	10	1.3	79
REGION—1988	7.7	4	10	1.4	19

INPUT



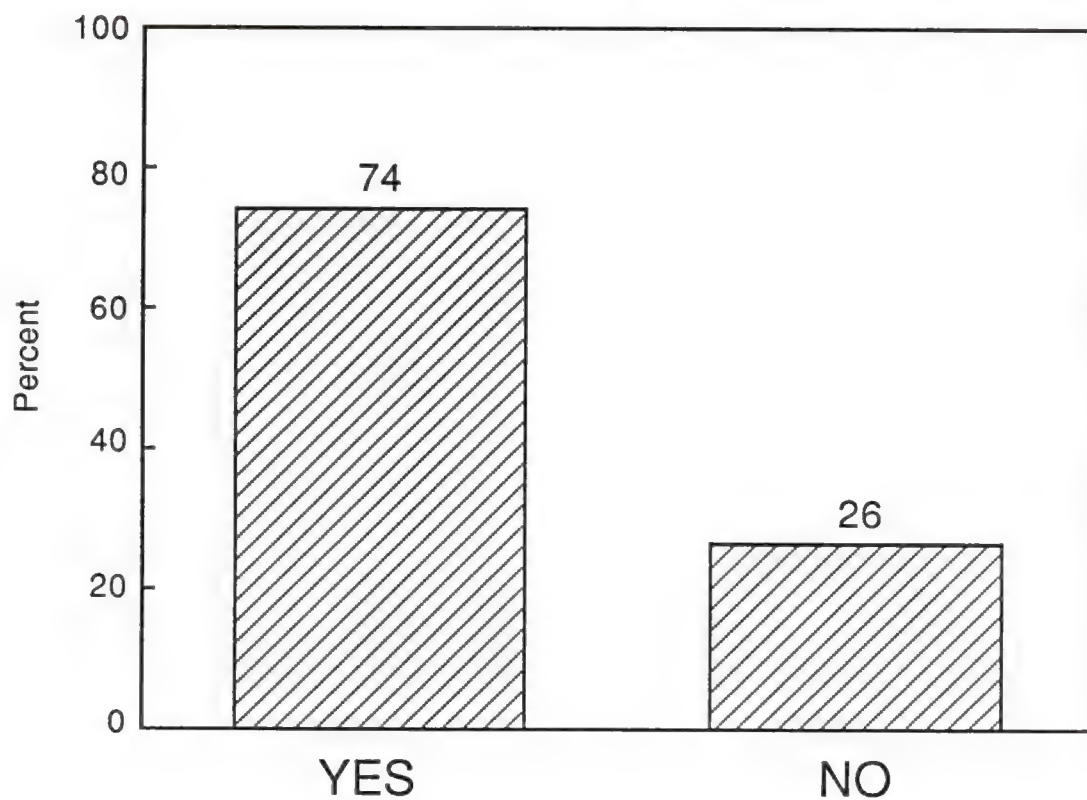
**OVERALL SATISFACTION  
IMPROVED/DECLINED/UNCHANGED  
(Eastern Region)**



INPUT



**ENOUGH INTERACTION WITH CRAY  
CORPORATE MANAGEMENT (Q28G)  
(Eastern Region)**



INPUT



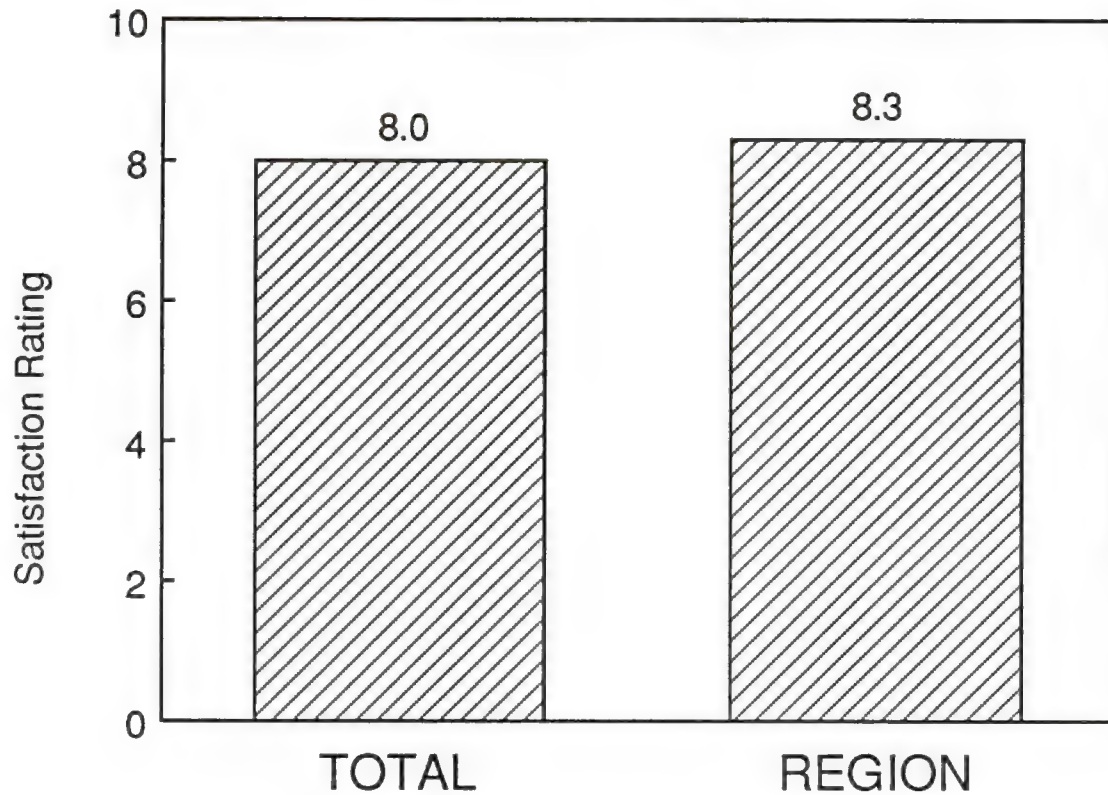
# **SOUTHERN REGION**

INPUT





## CRAY LIVING UP TO EXPECTATIONS (Southern Region)



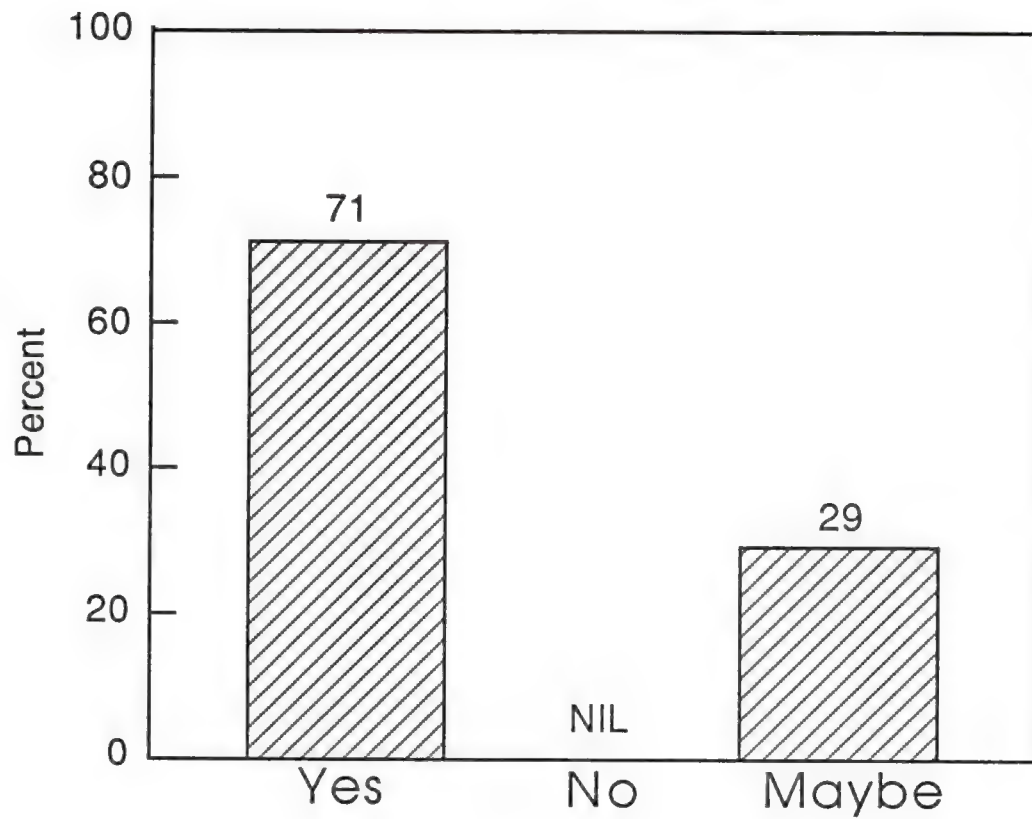
Q25: HOW WELL IS CRAY SYSTEM LIVING UP TO YOUR EXPECTATIONS?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.0	2	10	1.5	83
REGION—1988	8.3	7	10	0.8	12

INPUT



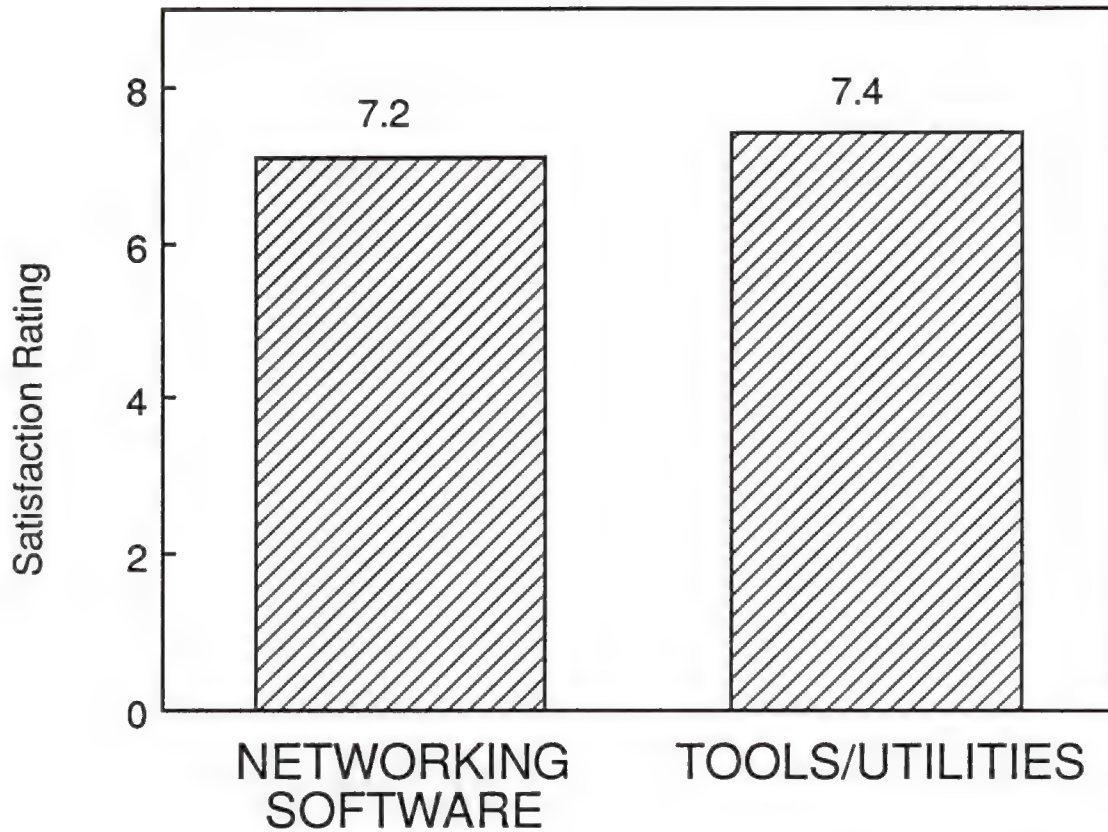
# BUY CRAY TOMORROW? (Southern Region)



INPUT



## SOFTWARE TRAINING



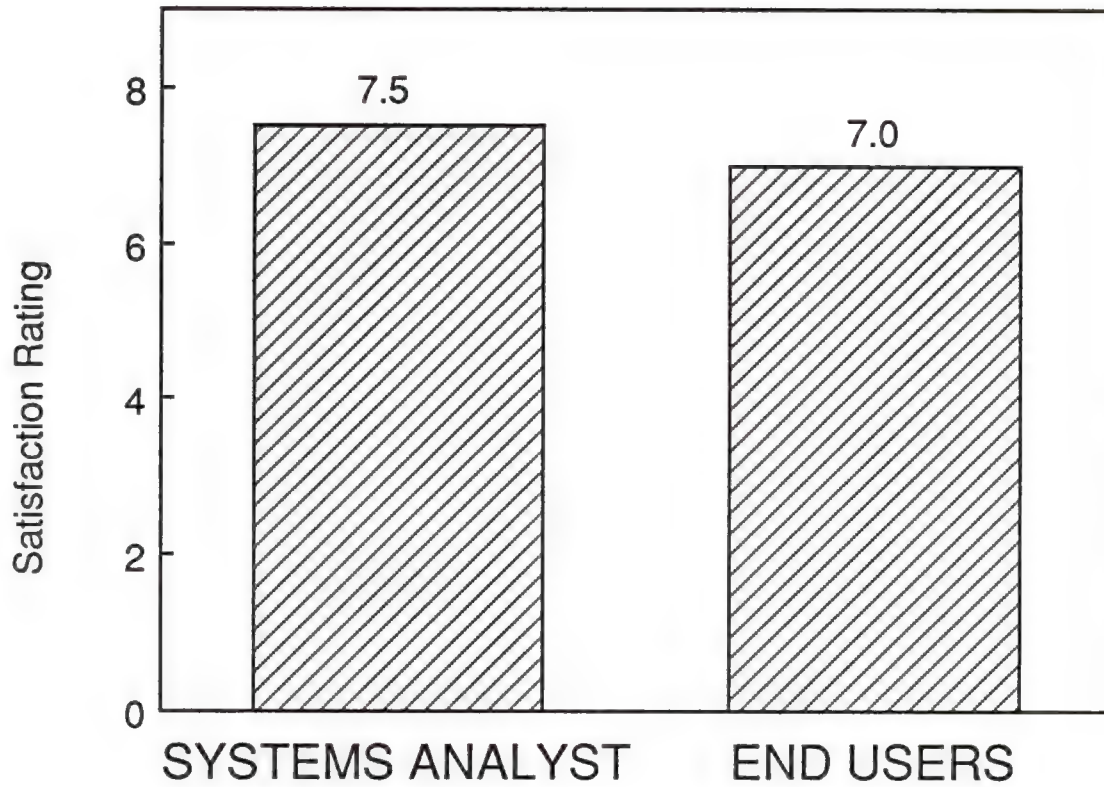
### Q20: TRAINING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
NETWORKING—1988	7.2	1	9	2.2	12
TOOLS/UTILITIES—1988	7.4	1	10	1.8	23

INPUT



## SOFTWARE TRAINING



### Q20: TRAINING

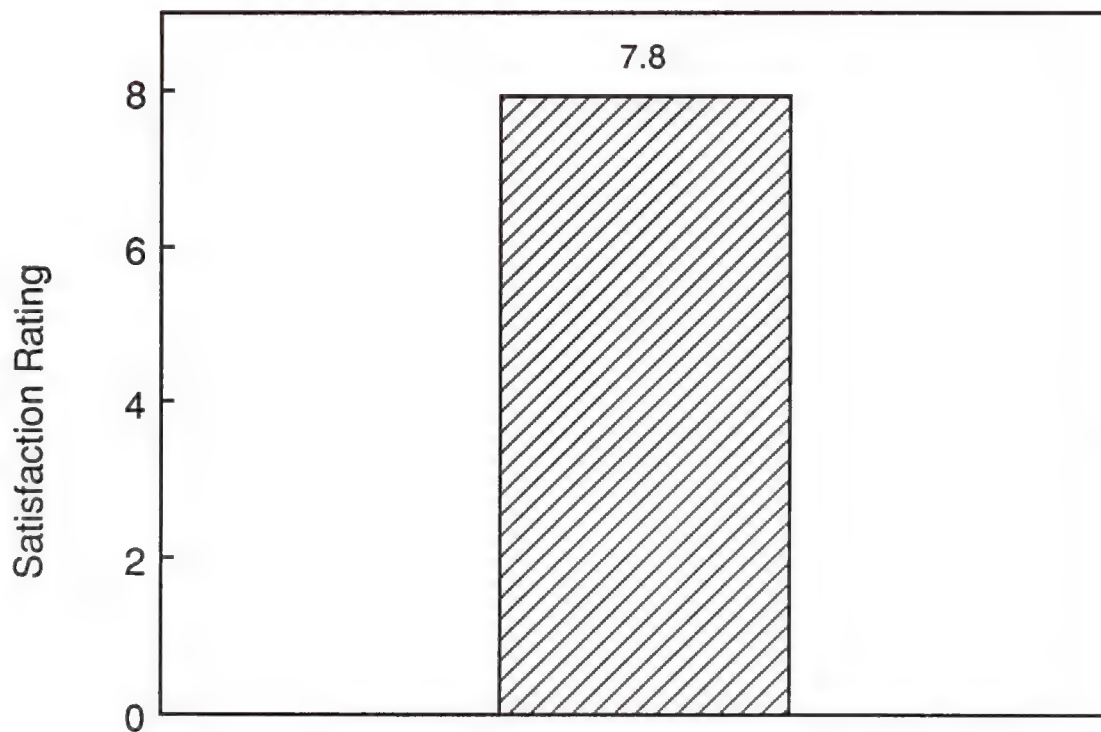
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEMS ANALYSTS—1988	7.5	1	10	1.9	28
END USER—1988	7.0	1	10	2.4	32

INPUT





## QUALITY OF APPLICATIONS SUPPORT



### Q24: RATE QUALITY OF APPLICATIONS SUPPORT

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
APPLICATIONS SUPPORT—1988	7.8	1	10	2.3	60

INPUT



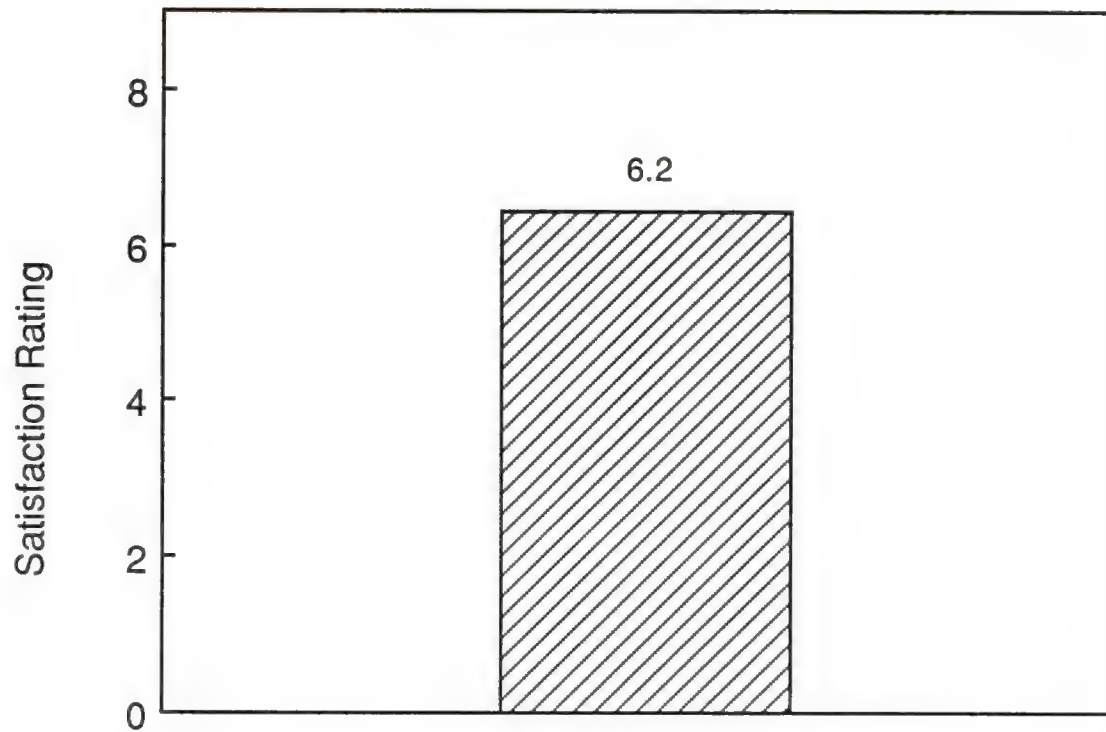
## THIRD-PARTY APPLICATIONS

<u>TOP 5</u>	<u>NUMBER OF MENTIONS</u>
Nastran	19
IMSL	8
Ansys	7
Gaussian	4
Disppla	3
Total Responses	<hr/> 75
Top 5 Percent of Total	<hr/> 55

INPUT



## INFORMED ABOUT PROBLEM RESOLUTION



Q16: HOW WELL INFORMED ABOUT PROBLEM RESOLUTION

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RESOLVE INFO —1988	6.2	1	10	2.5	75

INPUT



## OTHER SOFTWARE COMMENTS

- Positive
  - Very Good Support on a Saturday (107)
  - On-Site Support Good (125)

INPUT





## OTHER SOFTWARE COMMENTS

- Negative
  - Once Things Leave the Local Analysts, They Seem to Go into a Black Hole (122)
  - Many Problems Continue to Exist for Years (123)
  - Insufficient Local Expertise in Area of Networking (127)
  - If CRI Sale Depends on a Software Fix, CRI Will Respond Rapidly—If It Is Customer, Takes a Long Time (105)
  - Seems Like Software People Are in Place to Support Hardware Sales Instead of Existing Customers (105)
  - The Current Tolerance by Users of the Poor Cray Software Will Quickly Decrease in the Next Two Years, Especially as UNIX Becomes Available (120)

INPUT

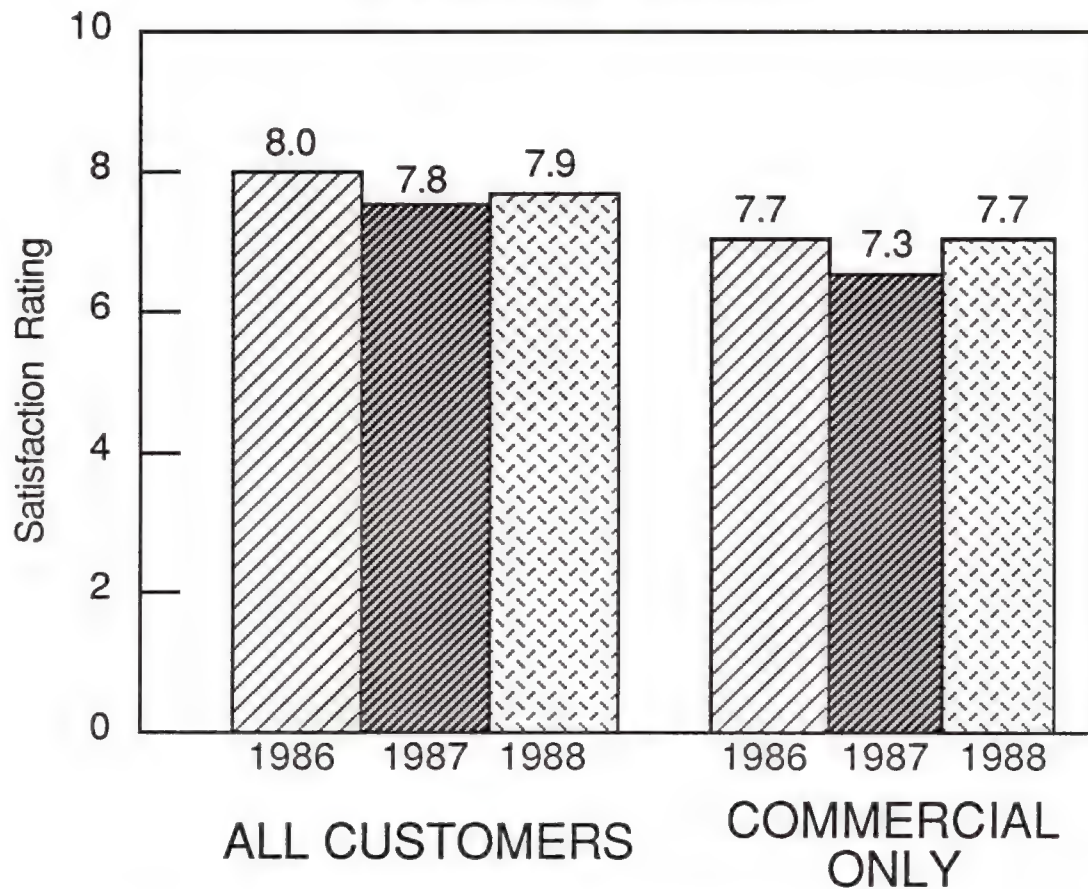


**CRI MARKETING  
AND  
HQ MANAGEMENT**

INPUT



## CRI RESPONSIVENESS— OVERALL NEEDS



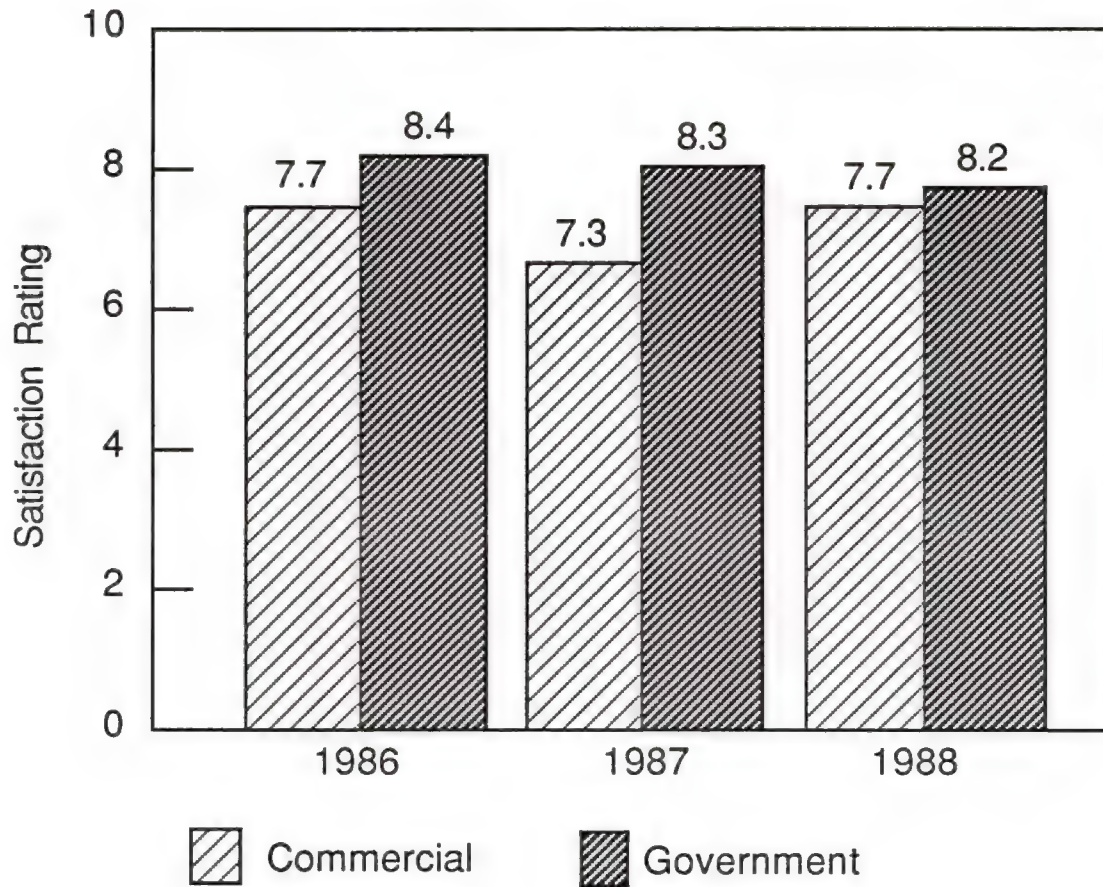
Q28 A: CRI RESPONSIVENESS—OVERALL NEEDS

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
OVERALL-1988	7.9	1	10	1.6	84
OVERALL-1987	7.8	3	10	1.7	57
OVERALL-1986	8.0	3	10	1.8	44
COMMERCIAL-1988	7.7	1	10	1.7	52
COMMERCIAL-1987	7.3	4	10	1.9	32
COMMERCIAL-1986	7.7	3	10	1.8	26

INPUT



## COMM./GOVT. SATISFACTION GAP



### Q28 A: CRI RESPONSIVENESS—OVERALL NEEDS

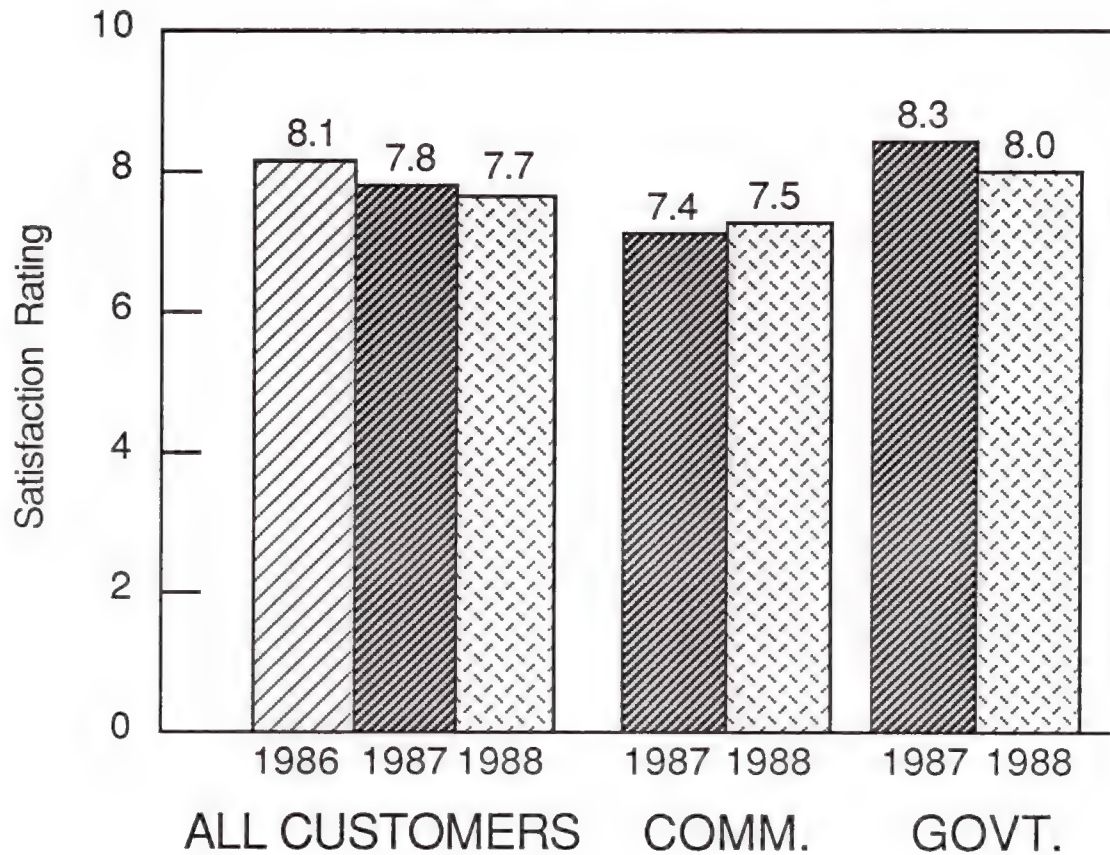
TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
COMMERCIAL-1988	7.7	1	10	1.7	52
COMMERCIAL-1987	7.3	4	10	1.9	32
COMMERCIAL-1986	7.7	3	10	1.8	26
GOVERNMENT-1988	8.2	5	10	1.4	32
GOVERNMENT-1987	8.3	3	10	1.4	25
GOVERNMENT-1986	8.4	4	10	1.6	18

INPUT





## CRI RESPONSIVENESS— FINANCIAL QUESTIONS



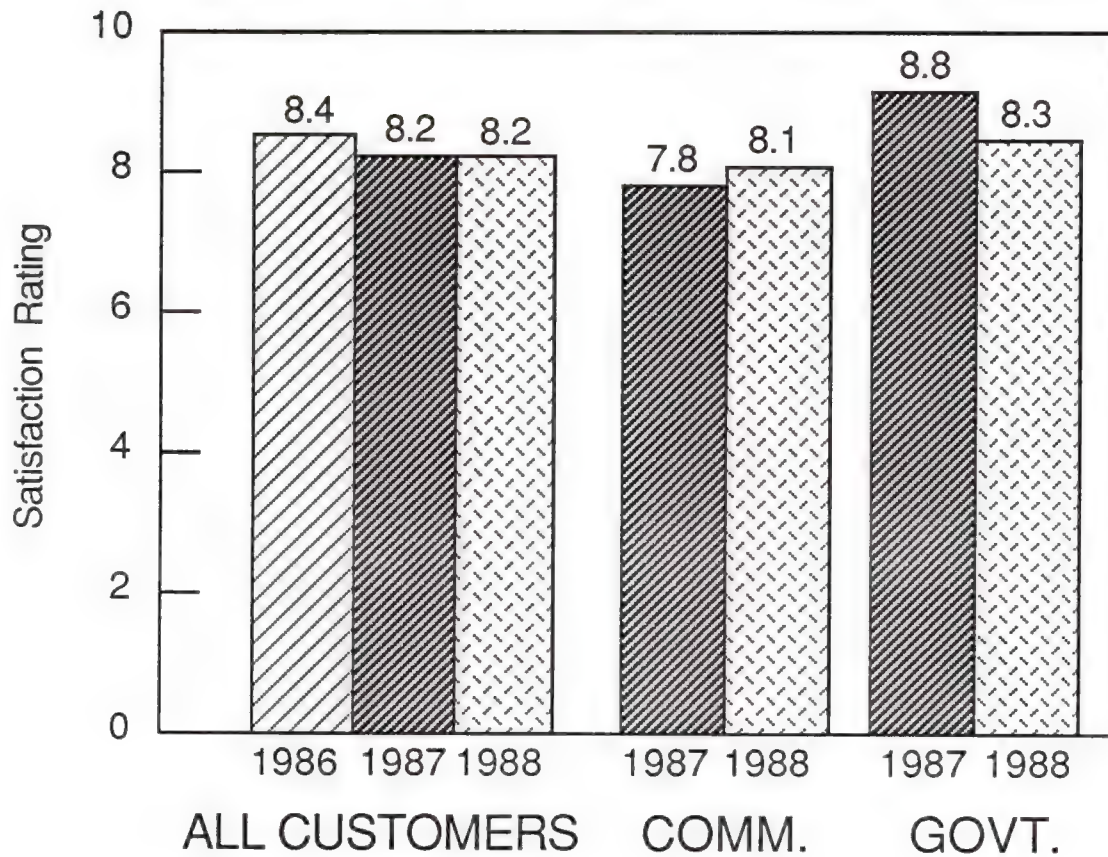
Q28 B: CRI RESPONSIVENESS—FINANCIAL QUESTIONS

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
ALL-1988	7.7	2	10	1.8	78
ALL-1987	7.8	2	10	1.7	48
ALL-1986	8.1	3	10	2.0	41
COMMERCIAL-1988	7.5	2	10	2.1	49
COMMERCIAL-1987	7.4	2	10	1.9	25
GOVERNMENT-1988	8.0	5	10	1.3	29
GOVERNMENT-1987	8.3	4	10	1.3	23

INPUT



## MARKETING RESPONSIVENESS: SIGNIFICANT COMM./GOVT. GAP



### Q28D: MARKETING RESPONSIVENESS

TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
ALL-1988	8.2	3	10	1.7	80
ALL-1987	8.2	1	10	1.6	57
ALL-1986	8.4	5	10	1.5	41
COMMERCIAL-1988	8.1	3	10	1.8	50
COMMERCIAL-1987	7.8	1	10	1.9	32
GOVERNMENT-1988	8.3	5	10	1.4	30
GOVERNMENT-1987	8.8	7	10	1.1	25

INPUT



## MARKETING SUPPORT

- Getting Enough Marketing Support? (Q28F)

	<u>1987</u>	<u>1988</u>
- Yes =	88%	73%
- No =	12%	27%

- Comments Generally Mixed

- Examples of Comments

- Good for Sales, but Not Support (116)
- High Turnover. Wrong Information (104)
- Never Been Contacted Personally (122)
- Would Be Nice to See Marketing Reps' Boss Once or Twice a Year (124)
- Does Not Volunteer Sufficient Information. Not Knowledgeable (127)

INPUT



## MARKETING SUPPORT

- Examples of Comments
  - My Rep Is Motivated by Next Sale Only (131)\*
  - Cray Is a Pleasure to Do Business With (153)
  - Local Rep Good, but Does Not Have Cray Support (159)\*
  - Sufficient Contact, Not Enough Support (202)\*

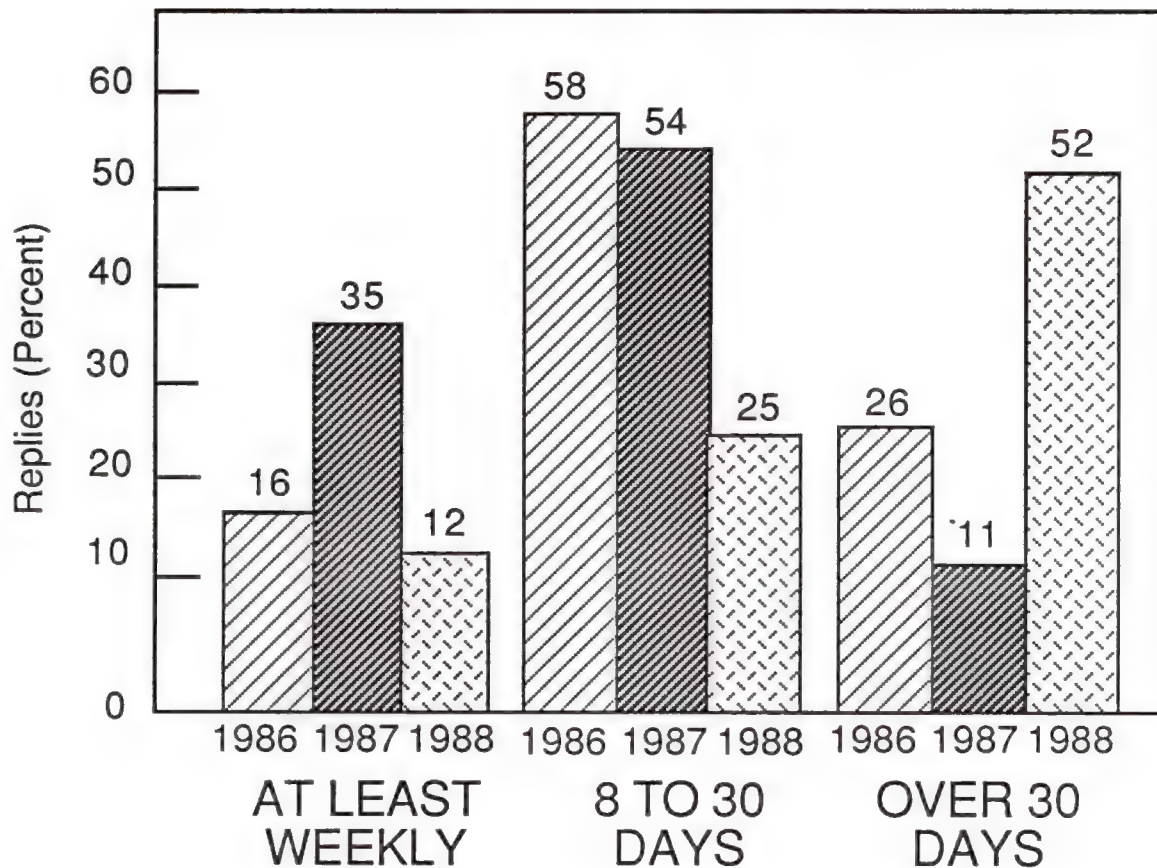
\* = Similar Concerns in 1986/1987 Survey

INPUT





## FREQUENCY OF SALES CONTACT



## TIME BETWEEN SALES CONTACTS

Q28E3: FREQUENCY OF INTERACTION WITH MARKETING REP.

TIME BETWEEN CONTACTS	1986*		1987		1988	
	#	%	#	%	#	%
AT LEAST WEEKLY	6	16	20	35	19	12
8 TO 30 DAYS	22	58	31	54	21	25
OVER 30 DAYS	10	26	6	11	43	52
TOTAL	38	100%	57	100%	83	89%

1986 survey measured sales visits only. 1987, 1988 include phone and visits.

INPUT



## ENOUGH INTERACTION WITH CRAY CORPORATE MANAGEMENT? (Q28G)

	<u>1987</u>	<u>1988</u>
Yes =	83%	80%
No =	17%	20%

- Examples of Comments
  - Cray Management Stonewalled Us on UNICOS Problem (110)
  - They Probably Have Better Things to Do (122)
  - Need More Information, Direction (145)
  - Remote Location. Limited Installation in Middle East (163)
  - Cray Does Not Have Understanding of Account, or Maybe Industrial Needs (202)

INPUT



## KEPT AWARE ENOUGH OF CRAY'S HARDWARE/SOFTWARE DIRECTIONS? (Q29)

	<u>1987</u>	<u>1988</u>
Yes =	62%	73%
No =	38%	27%

- Examples of Comments
  - Greater Executive-to-Executive Orientation (104)
  - Be Informed of Problems before the Fact, Not After (122)
  - More Regular Updates on Hardware Plans and Progress (123)
  - More Visibility on Schedules and Date Changes (142)
  - More Publications about Strategies and Developments (148)
  - More Information on Operating System Directions (156)
  - More Awareness of Directions on Low End (172)

INPUT



## **SUGGESTIONS TO IMPROVE INTERACTION**

- Cray Organize Technical Tour of Other Sites (101)
- Annual Visit by Key Senior Executive to Customer Site (103)
- Involve Users in Planning Future Products (122)
- More Frequent Domestic CUG Meetings (151)
- More On-Site Visits by Strategic Planners (163)
- Set Up CUG (in Japan) as Soon as Possible (205)
- Regular Site Audit Visits by Senior Management (200)

INPUT





## ATTITUDES TOWARD CUG

- Is an Effective Channel to Communicate with Cray Management? (Q30A)

<u>1987</u>	<u>1988</u>
-------------	-------------

- |             |     |
|-------------|-----|
| - Yes = 56% | 63% |
| - No = 44%  | 37% |

- Do You Use This Channel? (Q30B)

<u>1987</u>	<u>1988</u>
-------------	-------------

- |             |     |
|-------------|-----|
| - Yes = 64% | 64% |
| - No = 36%  | 36% |

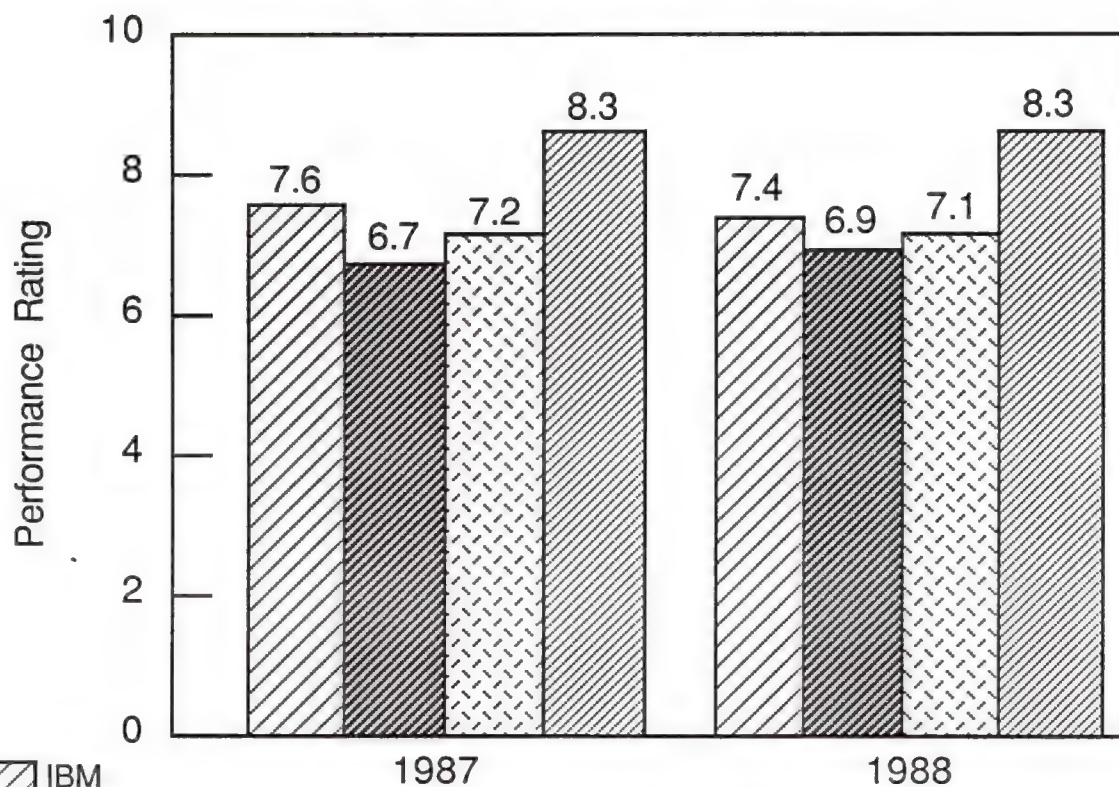
- Comments

- Best for Communicating with Other Users
- Too Much on a Technical Level
- Weak-Willed, Won't Stand Up to Cray
- CRI Executives Are Visible, but Not Sure Anything Happens

INPUT



## VENDOR COMPARISONS



 IBM  
 CDC  
 DEC  
 CRAY

## SYSTEM PERFORMANCE

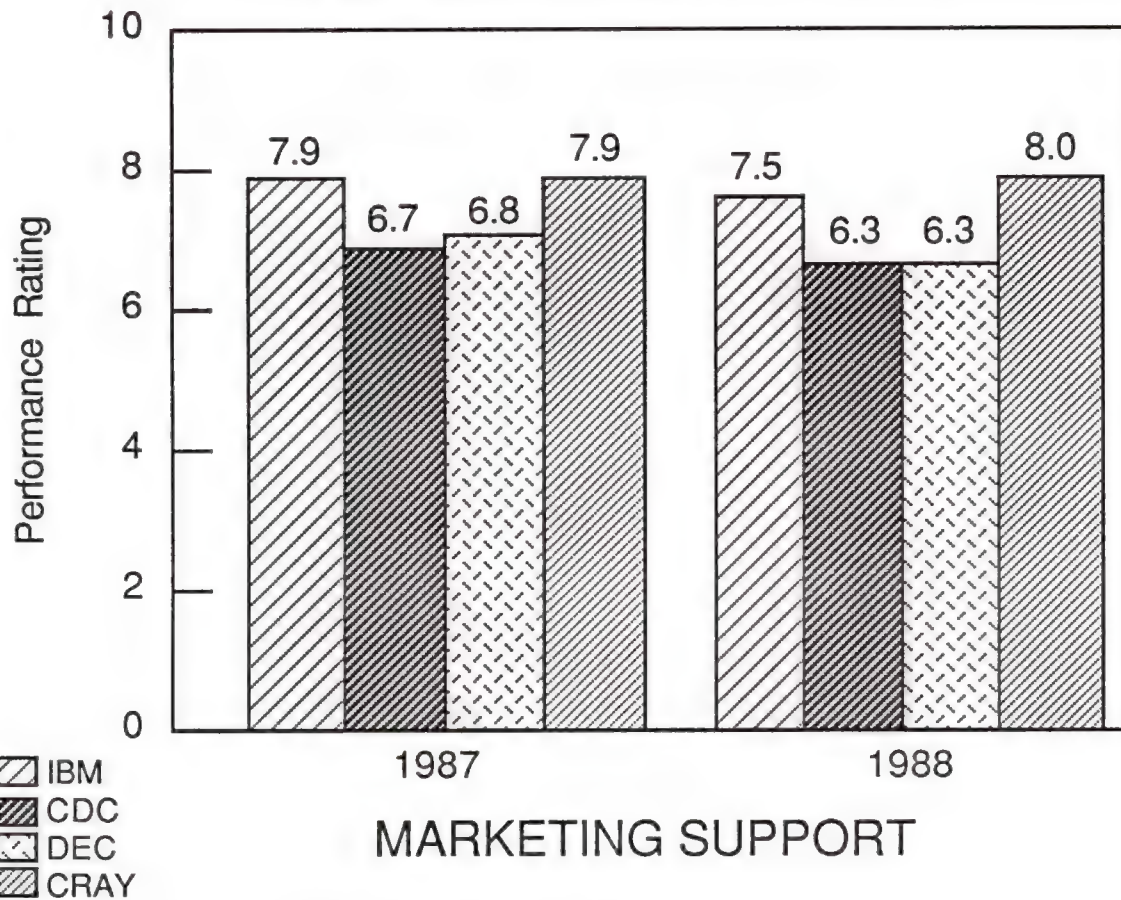
### Q27 A - D: VENDOR PERFORMANCE

VENDOR	MEAN	MIN	MAX	STD. DEV.	# CASES
<b>SYSTEM PERFORMANCE—1987</b>					
IBM	7.6	3	10	1.6	48
CDC	6.7	1	9	1.7	26
DEC	7.2	2	10	1.7	38
CRAY	8.3	4	10	1.3	47
<b>SYSTEM PERFORMANCE—1988</b>					
IBM	7.4	2	10	1.8	47
CDC	6.9	5	9	1.4	16
DEC	7.1	1	10	2.2	41
CRAY	8.3	4	10	1.3	62

INPUT



## VENDOR COMPARISONS



### Q27 A - D: VENDOR PERFORMANCE

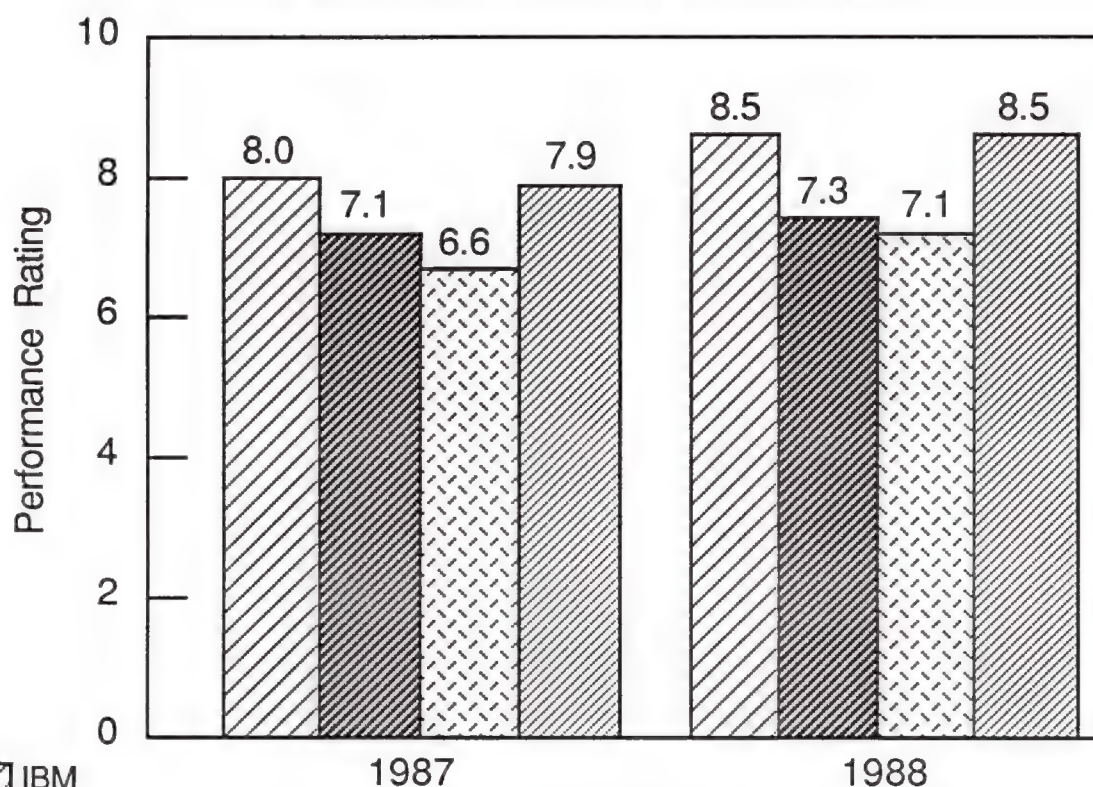
VENDOR	MEAN	MIN	MAX	STD. DEV.	# CASES
<b>MARKETING SUPPORT—1987</b>					
IBM	7.9	5	10	1.5	39
CDC	6.7	1	9	2.2	25
DEC	6.8	3	10	2.0	36
CRAY	7.9	2	10	1.6	47
<b>MARKETING SUPPORT—1988</b>					
IBM	7.5	2	10	2.3	46
CDC	6.3	1	9	2.1	16
DEC	6.3	1	10	2.7	42
CRAY	8.0	4	10	1.4	61

INPUT





## VENDOR COMPARISONS



▨ IBM  
 ▩ CDC  
 ▤ DEC  
 ▧ CRAY

## HARDWARE MAINTENANCE

### Q27 A - D: MAINTENANCE

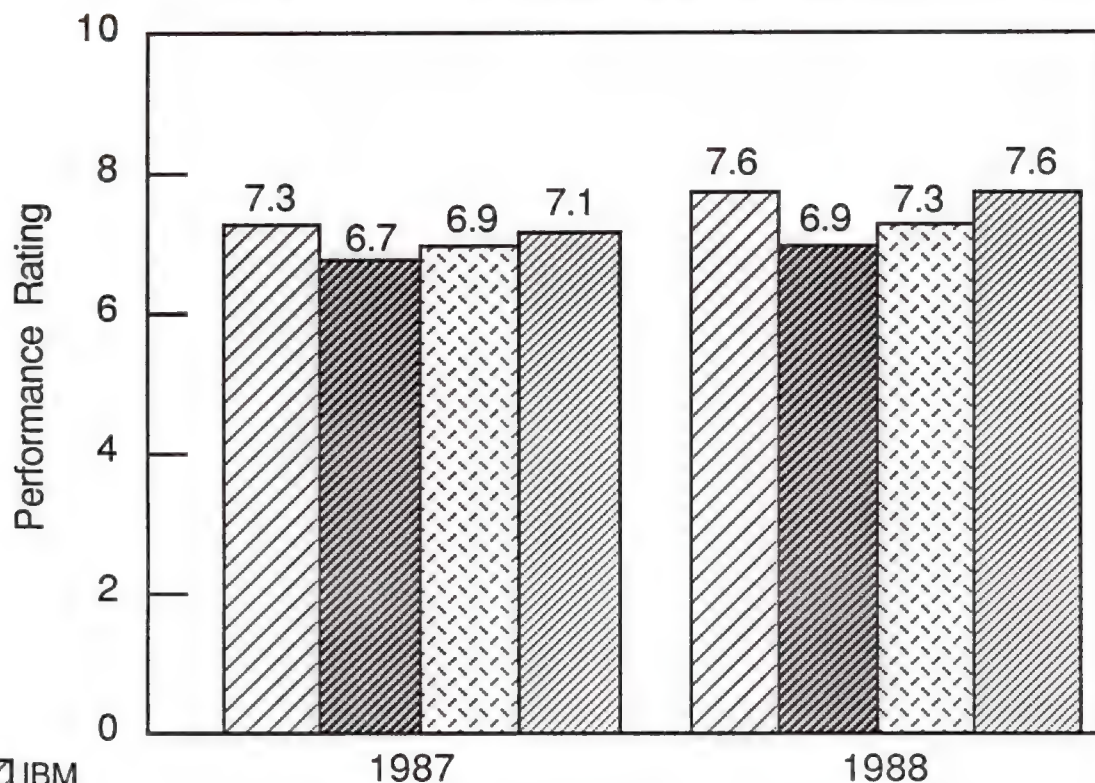
VENDOR	MEAN	MIN	MAX	STD. DEV.	# CASES
<b>HARDWARE MAINTENANCE—1987</b>					
IBM	8.0	3	10	1.9	39
CDC	7.1	2	10	1.6	23
DEC	6.6	3	10	2.0	36
CRAY	7.9	1	10	1.6	47
<b>HARDWARE MAINTENANCE—1988</b>					
IBM	8.5	5	10	1.4	48
CDC	7.3	5	9	1.4	16
DEC	7.1	2	10	2.2	45
CRAY	8.5	1	10	1.7	63

INPUT





## VENDOR COMPARISONS



▨ IBM  
 ▩ CDC  
 ▤ DEC  
 ▧ CRAY

## SOFTWARE MAINTENANCE

### Q27 A - D: MAINTENANCE

VENDOR	MEAN	MIN	MAX	STD. DEV.	# CASES
<b>SOFTWARE MAINTENANCE—1987</b>					
IBM	7.3	3	10	1.7	35
CDC	6.7	5	10	1.2	25
DEC	6.9	3	9	1.5	34
CRAY	7.1	4	10	1.5	46
<b>SOFTWARE MAINTENANCE—1988</b>					
IBM	7.6	3	10	1.8	45
CDC	6.9	4	8	1.4	16
DEC	7.3	1	10	1.9	40
CRAY	7.6	4	10	1.6	59

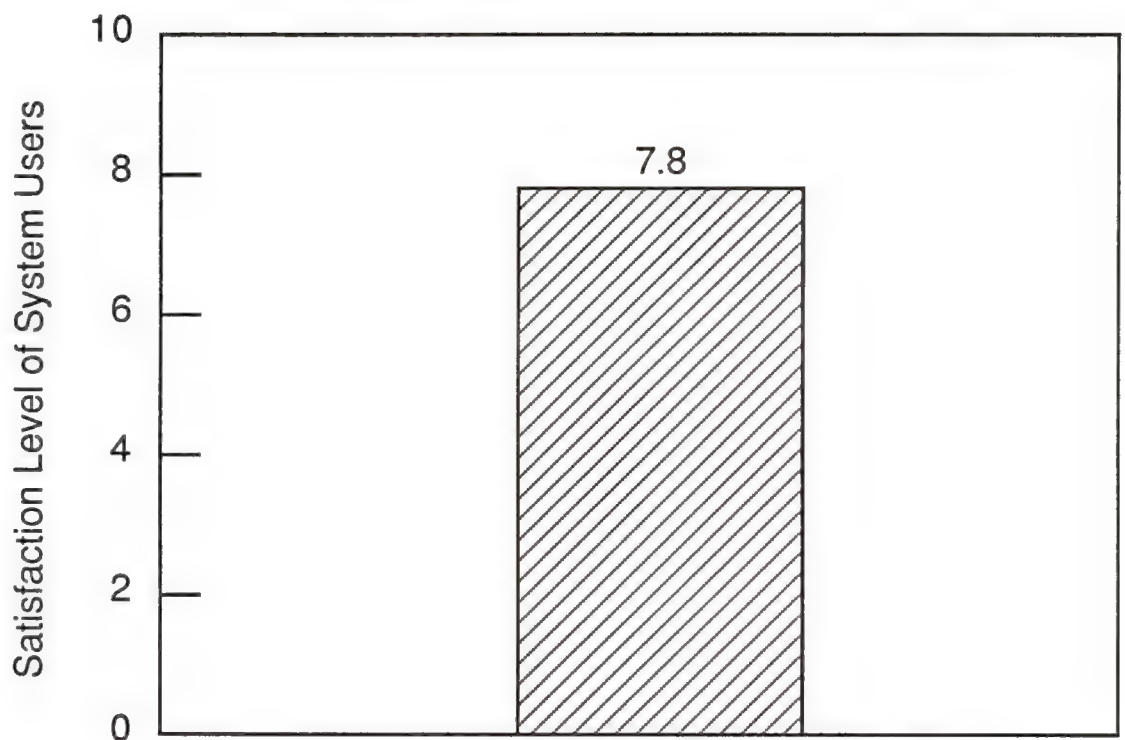
INPUT



## MEASUREMENT OF USER SATISFACTION

- Do you measure user satisfaction?

- Yes = 81%
- No = 19%



TYPE	MEAN	MIN	MAX	STD. DEV.	# CASES
SATISFACTION-1988	7.8	3	10	1.3	78

INPUT



## **AREA WHERE CRAY NEEDS MOST IMPROVEMENT**

- Of 78 Total Responses:
  - 38% (30 Responses) Directly Related to Software Quality and Development
- Other Common Areas Included:
  - Acknowledgement of Competition
  - Price Reduction
  - Hardware Migration Paths
  - Hardware Reliability
  - Improved Security
  - Improved Management Control Information (Accounting, Error Statistics, etc.)

INPUT



## **CRAY'S SINGLE GREATEST STRENGTH**

- Of 81 Total Responses:
  - 54% (44 Responses) Directly Related to Hardware Size, Speed, Architecture, etc.
- Other Common Areas Included:
  - Company Reputation
  - Response to Customer Needs
  - Market Share

INPUT





## **CUSTOMER IMPRESSIONS/CONCERNS**

- CRI People
  - CRI People Care a Lot, Are Very Dedicated\*
  - CRI Listens More Than They Respond
- Hardware
  - Reliability Needs More Attention\*
  - Better Diagnostics Needed\*
  - Improved Tape Support Desired\*
  - Field Upgradability Needed

\* = Similar Response in 1986/1987 Survey

INPUT



## **CUSTOMER IMPRESSIONS/CONCERNS**

- Software
  - Progress Being Made Regarding Reliability\*
    - COS Complaints Remain High. Little Change from 1987 Survey\*
    - FORTTRAN Complaints Remain High\*
  - Very High Frustration with Bug Frequency/Time to Repair\*
    - Customers Dislike Being Used to Find Errors\*
    - Existing Fixes Not Readily nor Uniformly Communicated\*
  - CRI Relies Too Much on Hardware Speed to Cover Software Inefficiencies\*

\* = Similar Response in 1986/1987 Survey

INPUT



## **CUSTOMER IMPRESSIONS/CONCERNS**

- Systems
  - Want Better Fit of Cray into Total Computing Environment. CRI Attitude Still Perceived as Standalone Machine-Oriented\*
- Prices and Terms
  - Hardware Costs Are High\*
  - Maintenance Costs Are High\*
  - Contract Policies Are Too Rigid Regarding Software Licensing\*
- Organization
  - Hard to Identify Who's in Charge at Middle Levels\*

\* = Similar Response in 1986/1987 Survey

INPUT



# **ANALYSIS OF FINDINGS INTERNATIONAL SUMMARY**

INPUT





## DOMESTIC AND INTERNATIONAL SIMILARITIES AND DIFFERENCES (Selected Indicators)

	<u>Domestic</u> (Percent)	<u>Int.</u> (Percent)
• Primary Modle Types Are Similar with More C-1's and Less C-2's		
- XMP	77	62
- C-1	16	31
- C-2	7	—
• Mix of Operating Systems Are Different, with More COS and No CTSS		
- COS	71	91
- UNICOS	17	9
- CTSS	12	—
• System Utilization Is Generally Higher		
0-41%	11	8
41-89%	49	33
90-100%	38	58
• The Mix between Production and Research Is Nearly the Same		
Research	54	50
Production	46	50

INPUT



## SELECTED INDICATORS DECISION IMPORTANCE CRITERIA

- In Most Cases, Including International Data with Domestic Data Has Little Impact on U.S. Results

	<u>Ratings</u>		
	<u>Total</u>	<u>Int</u>	<u>U.S.</u>
• Overall System Performance	9.2	9.4	9.1
• Overall System Price	7.9	8.0	7.9
• Price Performance	8.6	8.4	8.6
• Hardware Reliability	8.9	8.7	8.9
• Systems Software:			
Performance	8.1	8.3	8.0
Reliability	8.7	8.4	8.8
Usability	8.0	7.8	8.1
Functionality	8.1	7.9	8.1
Maintenance Support	8.0	8.2	8.0
Training	6.1	6.5	6.0
Documentation	6.9	6.8	6.9
• Application Software Availability	7.1	7.7	6.7
• Networking/Connectivity	8.3	8.5	8.3
• Conversion Ease	7.6	7.5	7.6

INPUT



## SELECTED INDICATORS CRAY MEETING DECISION CRITERIA

- In Several Areas, International Customers Rated Cray Lower than U.S. Customers, but Differences Had Little Impact on Overall Results.

	<u>Ratings</u>		
	<u>Total</u>	<u>Int</u>	<u>U.S.</u>
• Overall System Performance	8.0	7.5	8.2
• Overall System Price	6.8	6.7	6.8
• Price Performance	7.2	6.6	7.4
• Hardware Reliability	7.8	7.3	7.9
• Systems Software:			
Performance	7.4	7.4	7.4
Reliability	7.0	6.3	7.2
Usability	7.3	7.1	7.4
Functionality	6.8	6.5	6.8
Maintenance Support	7.7	7.1	7.8
Training	6.7	6.4	6.8
Documentation	6.5	5.9	6.7
• Application Software Availability	7.2	7.3	7.2
• Networking/Connectivity	7.4	7.1	7.4
• Conversion Ease	7.2	6.8	7.3

INPUT



# **ANALYSIS OF FINDINGS REGIONAL SUMMARIES**

INPUT



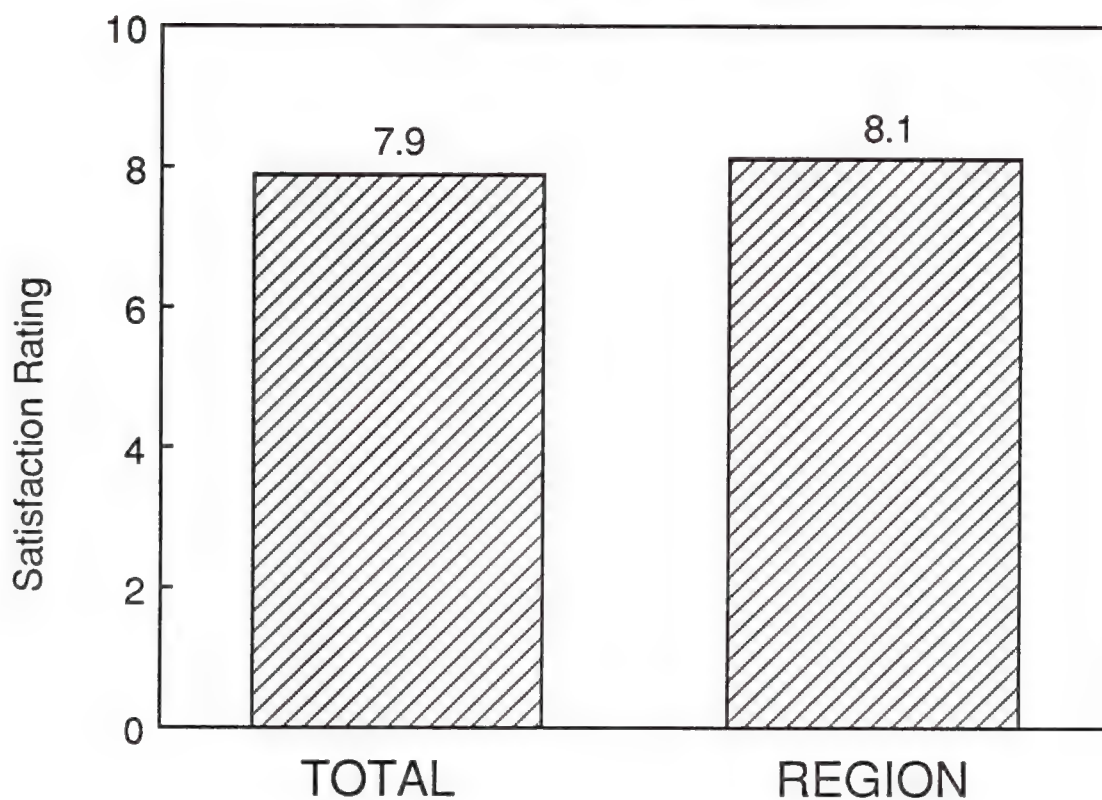


# CENTRAL REGION

INPUT



## CRAY LIVING UP TO EXPECTATIONS (Central Region)



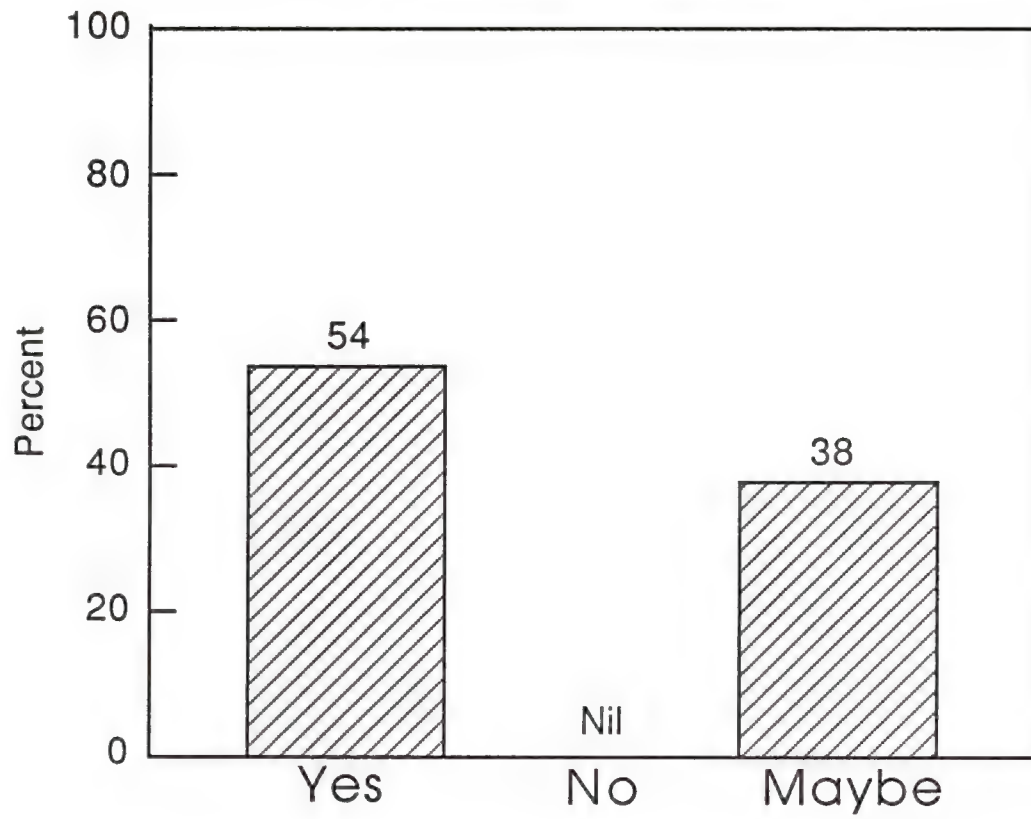
Q25: HOW WELL IS CRAY SYSTEM LIVING UP TO YOUR EXPECTATIONS?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.0	2	10	1.5	83
REGION—1988	8.1	5	10	1.4	12

INPUT



### BUY CRAY TOMORROW? (Central Region)



INPUT



# **DECISION CRITERIA IF BUY TODAY (Central Region)**

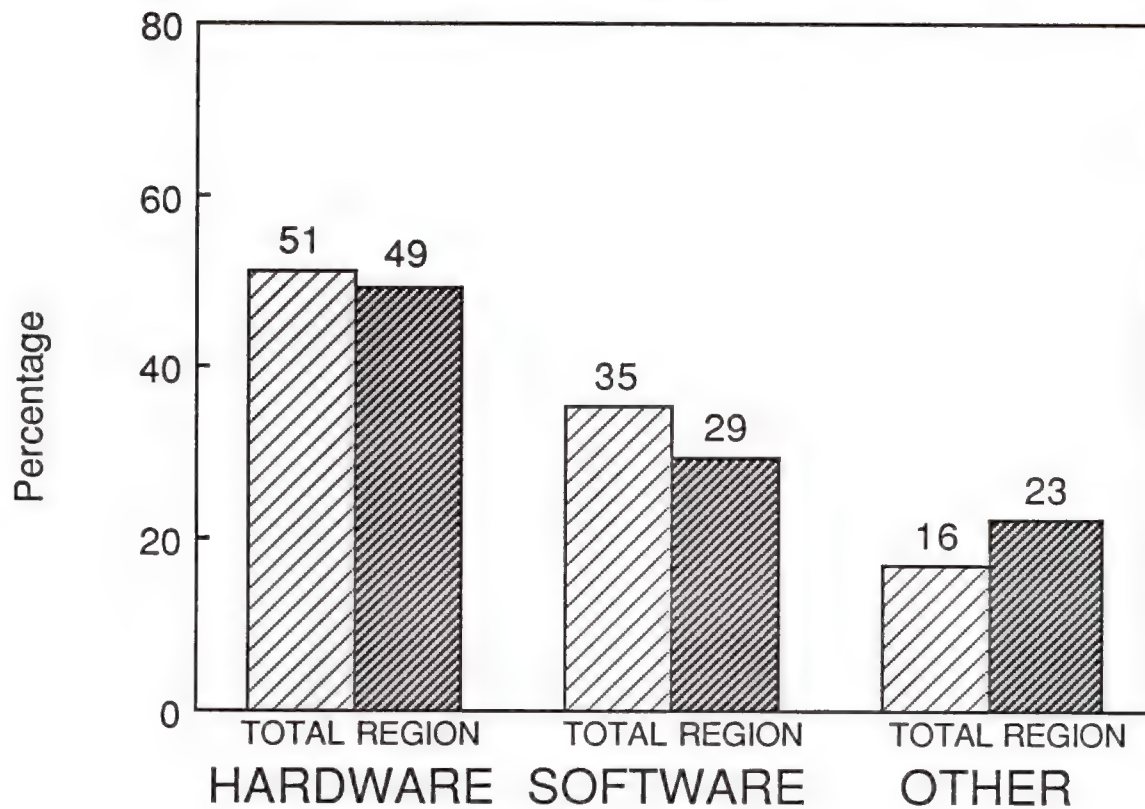
<u>Rank</u>		<u>Decision Importance</u>	<u>Cray Rate</u>
1	Overall Sys. Performance	9.3	8.2
2	Sys. SW Reliability	8.9	6.5
3	Price Performance	8.8	6.6
3	Hardware Reliability	8.8	8.3
4	Network/Connectivity	8.7	6.8
4	Sys. SW Usability	8.7	7.0
5	SW Maint. Support	8.3	7.0
5	Sys. SW Functionality	8.3	5.9
6	Sys. SW Performance	8.2	7.1
7	Overall System Price	8.0	6.2
8	Conversion Ease	7.4	7.3
8	Documentation	7.4	6.5
9	Application Software Avail.	6.8	6.9
10	Training	6.7	6.6

INPUT





## SYSTEM OUTAGE BY CAUSE (Central Region)



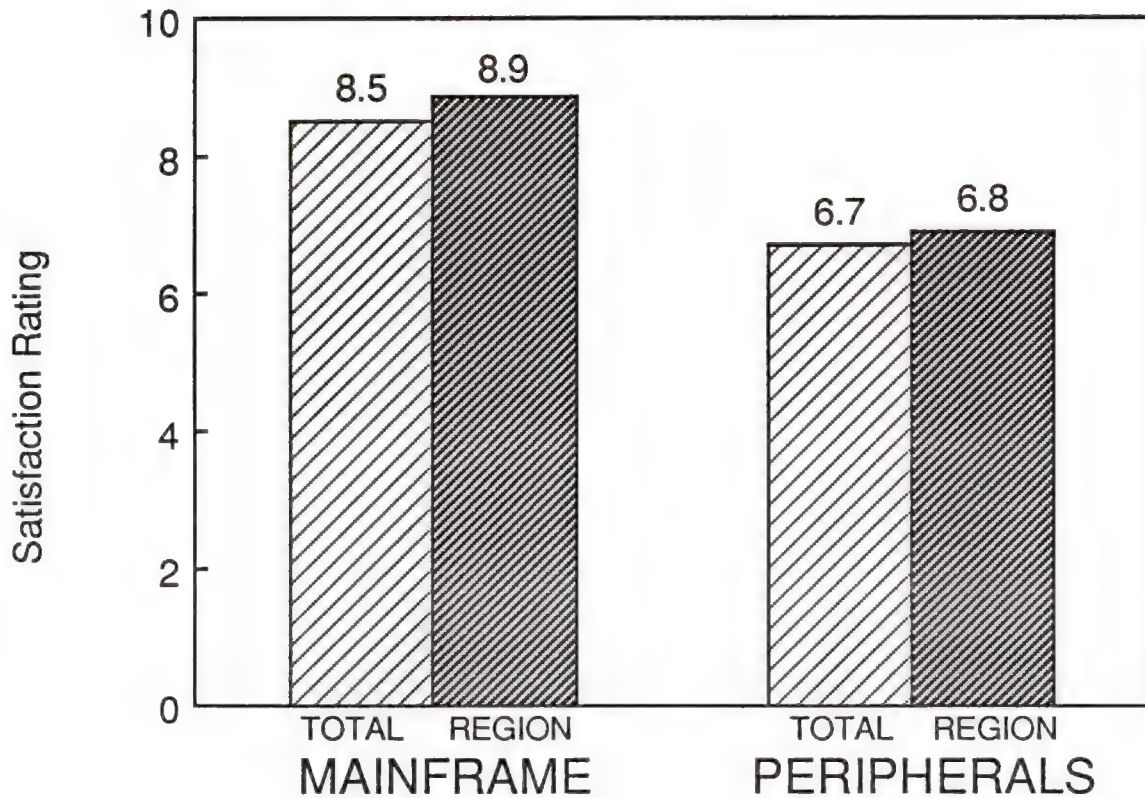
### Q7A, B, C: HARDWARE, SOFTWARE AND OTHER INTERRUPTION

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
HARDWARE					
TOTAL—1988	51	8	100	26.9	77
REGIONAL—1988	49	11	100	33.1	10
SOFTWARE					
TOTAL—1988	35	0	85	24.2	74
REGIONAL—1988	29	7	60	20.0	10
OTHER					
TOTAL—1988	16	0	72	16.7	74
REGIONAL—1988	23	3	72	23.6	10

INPUT



# **HARDWARE SATISFACTION MAINFRAME/PERIPHERALS (Central Region)**



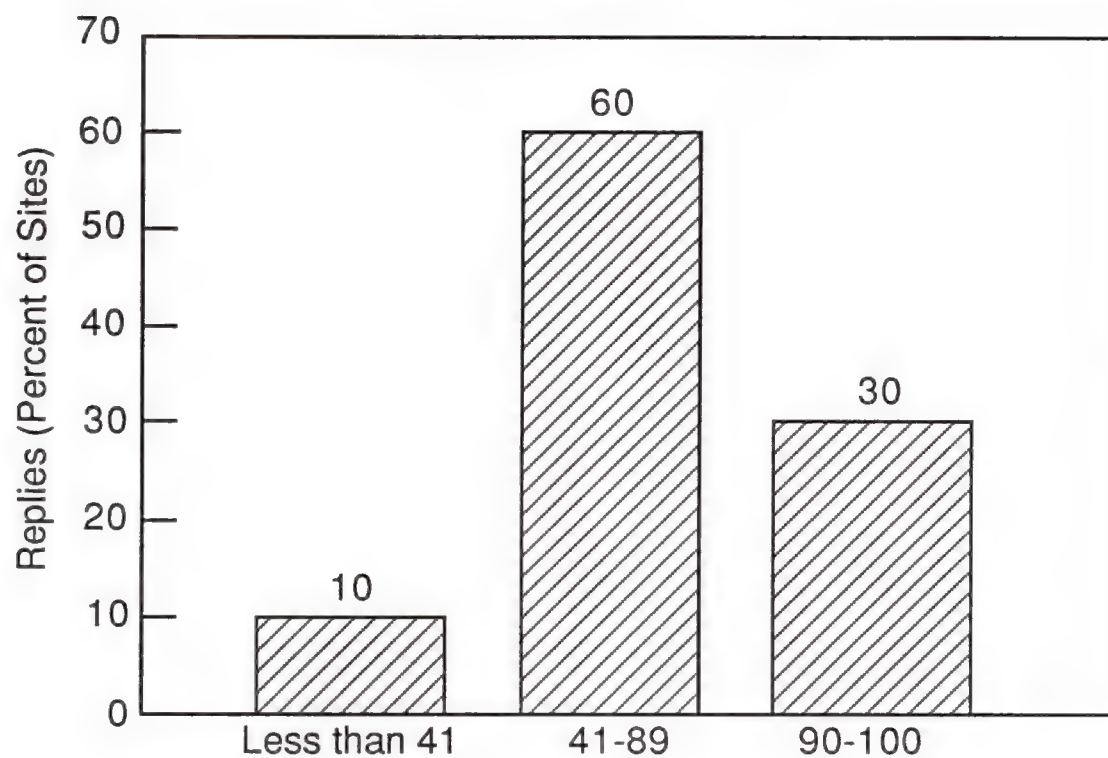
## Q10A. B: MAINFRAME/PERIPHERAL RELIABILITY

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
MAINFRAME					
TOTAL—1988	8.5	2	10	1.4	83
REGIONAL—1988	8.9	6	10	1.2	11
PERIPHERALS					
TOTAL—1988	6.7	1	10	2.3	83
REGIONAL—1988	6.8	2	10	2.5	11

INPUT



## UTILIZATION PROFILE (Central Region)

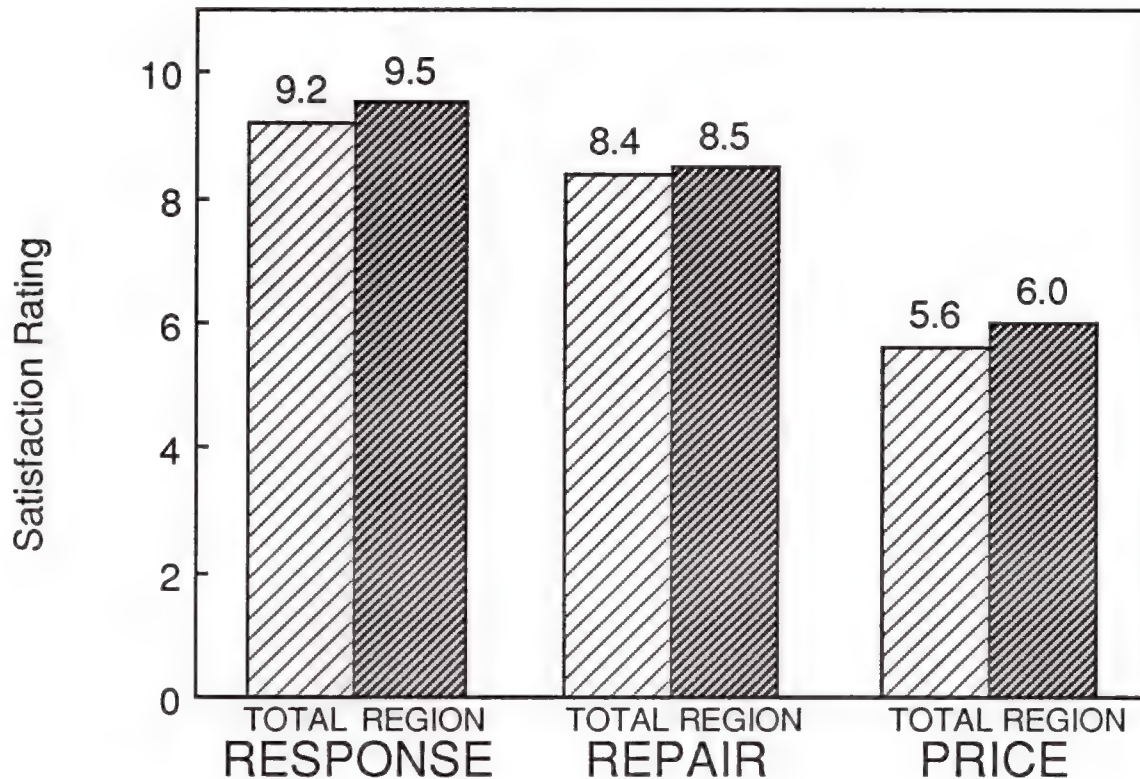


Q6: Average Monthly Utilization for Past 6 Months

INPUT



## MAINTENANCE RESPONSE SATISFACTION (Central Region)



### Q10C, D, E: HARDWARE MAINTENANCE, RESPONSE, REPAIR TIME AND PRICE

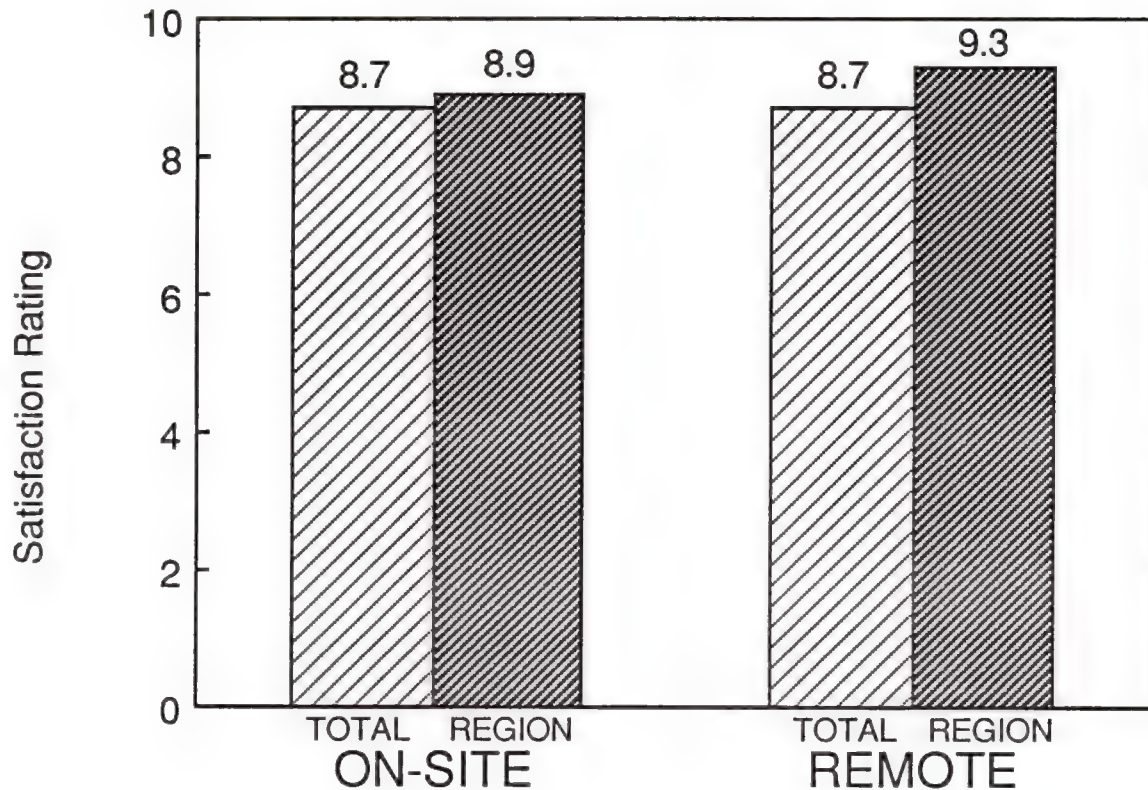
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RESPONSE					
TOTAL—1988	9.2	6	10	0.9	83
REGIONAL—1988	9.5	8	10	0.8	11
REPAIR					
TOTAL—1988	8.4	3	10	1.6	82
REGIONAL—1988	8.5	5	10	1.6	11
PRICE					
TOTAL—1988	5.6	1	10	2.5	74
REGIONAL—1988	6.0	4	10	1.8	9

INPUT





## ENGINEER SKILL LEVEL (Central Region)



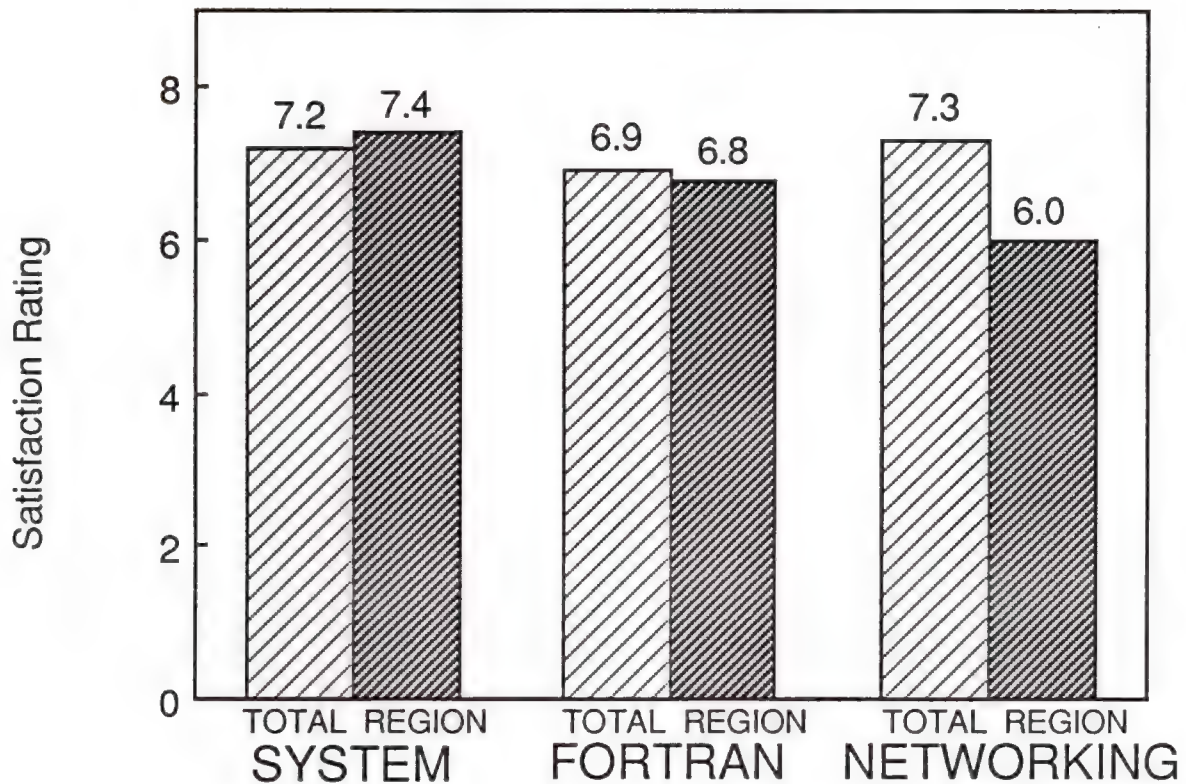
### Q12E.F: CUSTOMER ENGINEER SKILL LEVEL RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
ON-SITE					
TOTAL—1988	8.7	6	10	1.2	88
REGIONAL—1988	8.9	6	10	1.5	11
REMOTE					
TOTAL—1988	8.7	5	10	1.4	75
REGIONAL—1988	9.3	8	10	0.9	9

INPUT



## SOFTWARE RELIABILITY (Central Region)



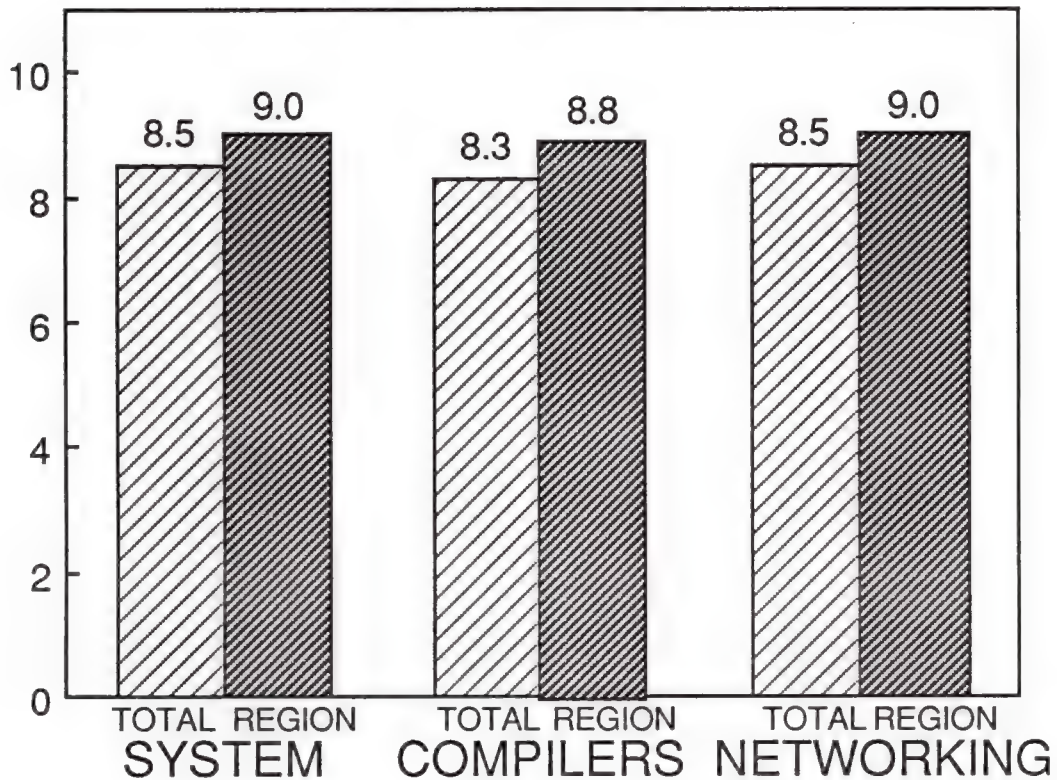
### Q13A. B. D: SYSTEM SOFTWARE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	7.2	1	10	2.0	78
REGIONAL—1988	7.4	4	10	1.9	9
COMPILERS (Fortran)					
TOTAL—1988	6.9	3	10	1.7	81
REGIONAL—1988	6.8	4	10	1.8	11
NETWORKING					
TOTAL—1988	7.3	3	10	2.0	26
REGIONAL—1988	6.0	3	8	2.6	3

INPUT



# SOFTWARE SUPPORT RATINGS LOCAL SITE SUPPORT (Central Region)



Q18A, B, D: SOFTWARE SUPPORT RATINGS

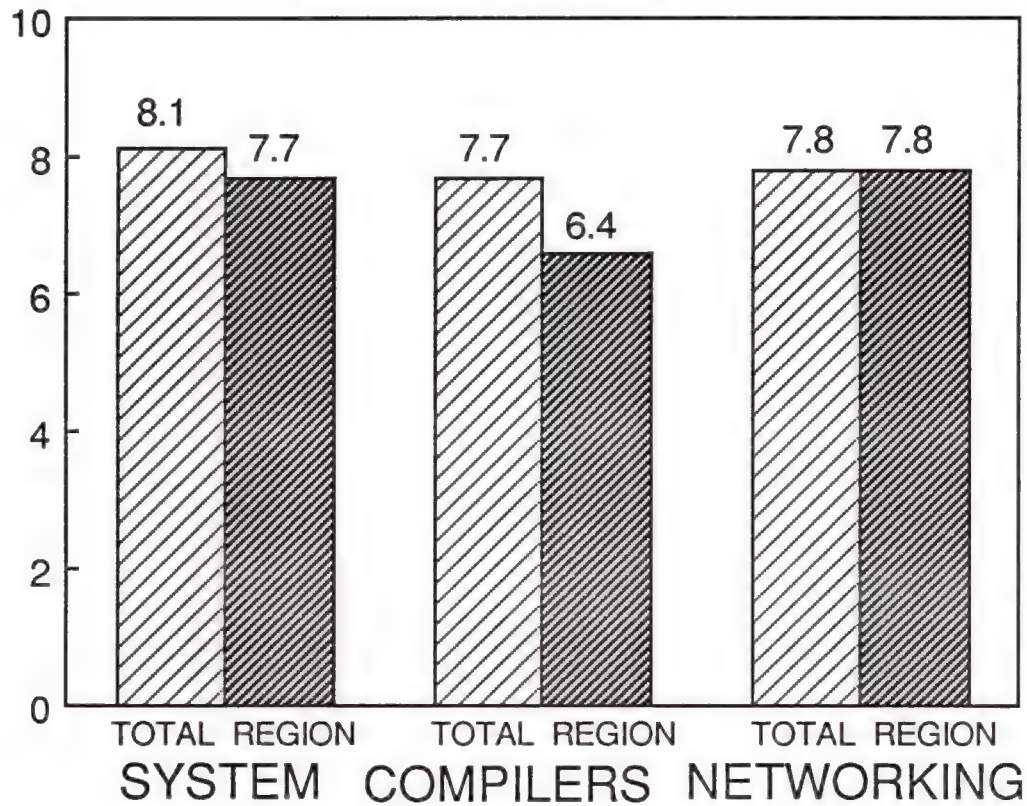
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	8.5	3	10	1.7	75
REGIONAL—1988	9.0	7	10	1.1	10
COMPILERS (Fortran)					
TOTAL—1988	8.3	3	10	1.8	72
REGIONAL—1988	8.8	7	10	1.2	12
NETWORKING					
TOTAL—1988	8.5	3	10	1.9	35
REGIONAL—1988	9.0	8	10	0.8	4

INPUT





## SOFTWARE SUPPORT RATINGS FIELD SUPPORT (Central Region)



### Q18A,B,D: SOFTWARE SUPPORT RATING

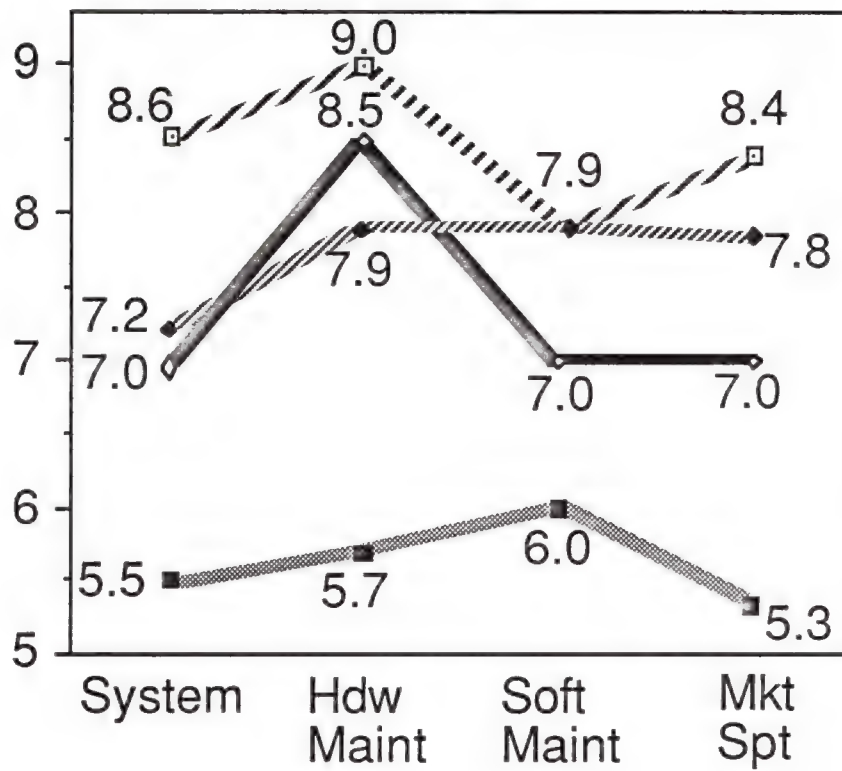
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SOFTWARE					
TOTAL—1988	8.1	4	10	1.4	47
REGIONAL—1988	7.7	5	10	1.7	7
COMPILERS (FORTRAN)					
TOTAL—1988	7.7	3	10	1.6	46
REGIONAL—1988	6.4	3	9	2.2	9
NETWORKING					
TOTAL—1988	7.8	4	10	1.5	24
REGIONAL—1988	7.8	6	10	1.7	4

INPUT





## VENDOR COMPARISONS (Central Region)

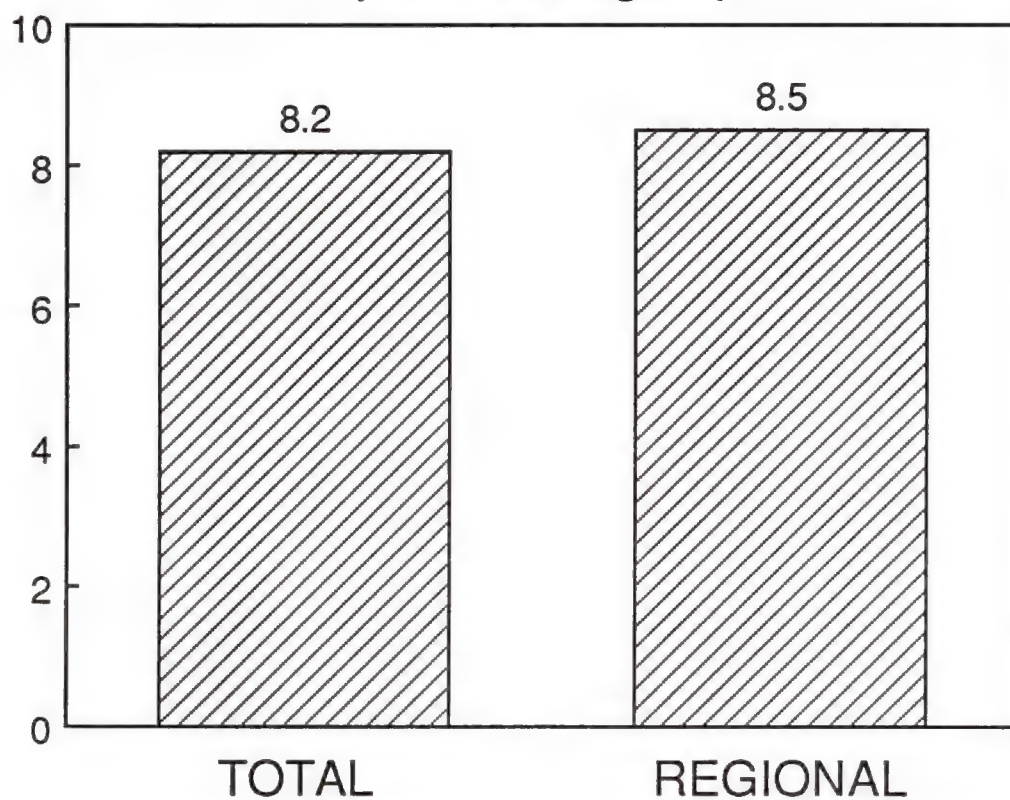


----- Cray  
..... IBM  
----- DEC  
———— CDC

INPUT



# **MARKETING REPRESENTATIVE HELPLEFULNESS (Central Region)**



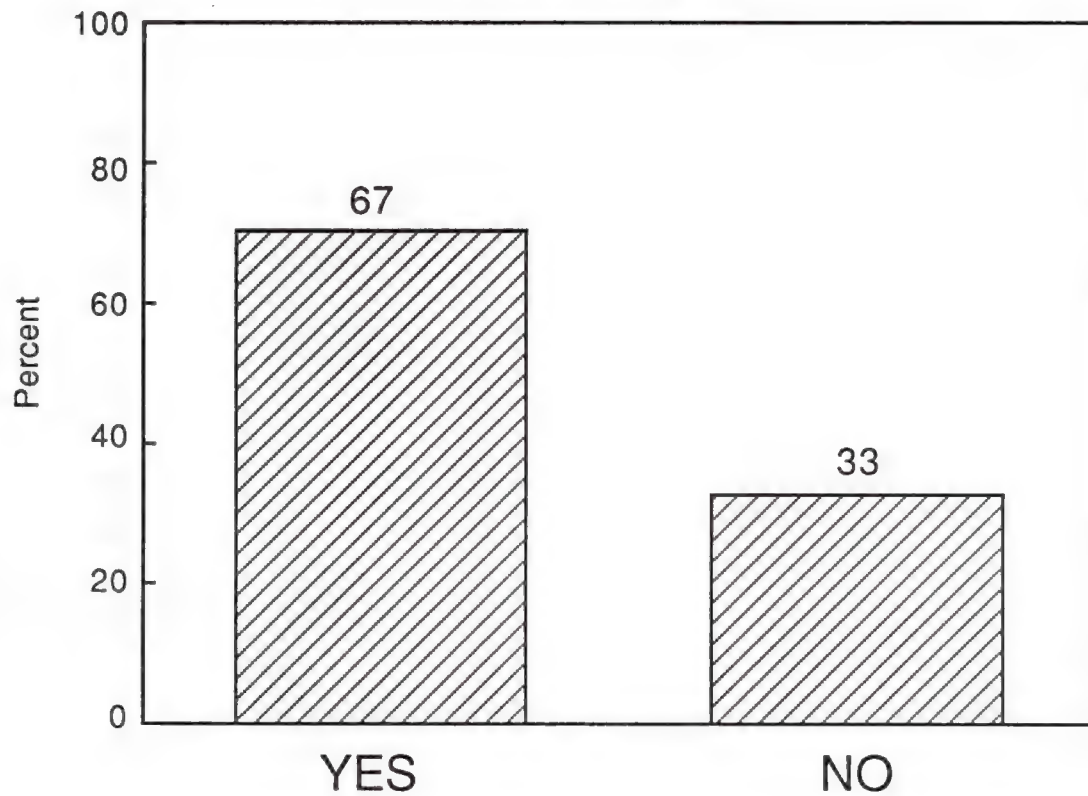
## Q28D: HELPLEFULNESS OF CRAY LOCAL MARKETING REPRESENTATIVE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.2	3	10	1.7	80
REGION—1988	8.5	5	10	1.4	11

INPUT



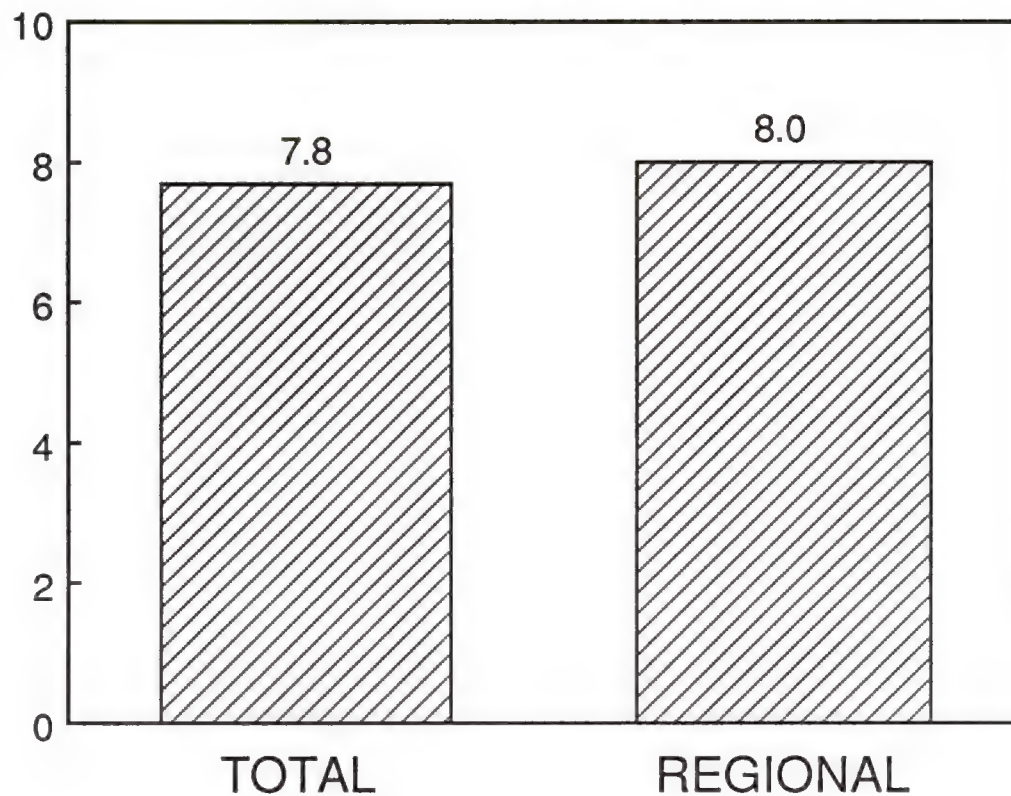
**KEPT AWARE ENOUGH OF CRAY'S  
HARDWARE/SOFTWARE DIRECTIONS (Q29)  
(Central Region)**



INPUT



## USER SATISFACTION WITH SYSTEM (Central Region)



### Q32B: HOW DO USERS RATE SATISFACTION WITH SYSTEM?

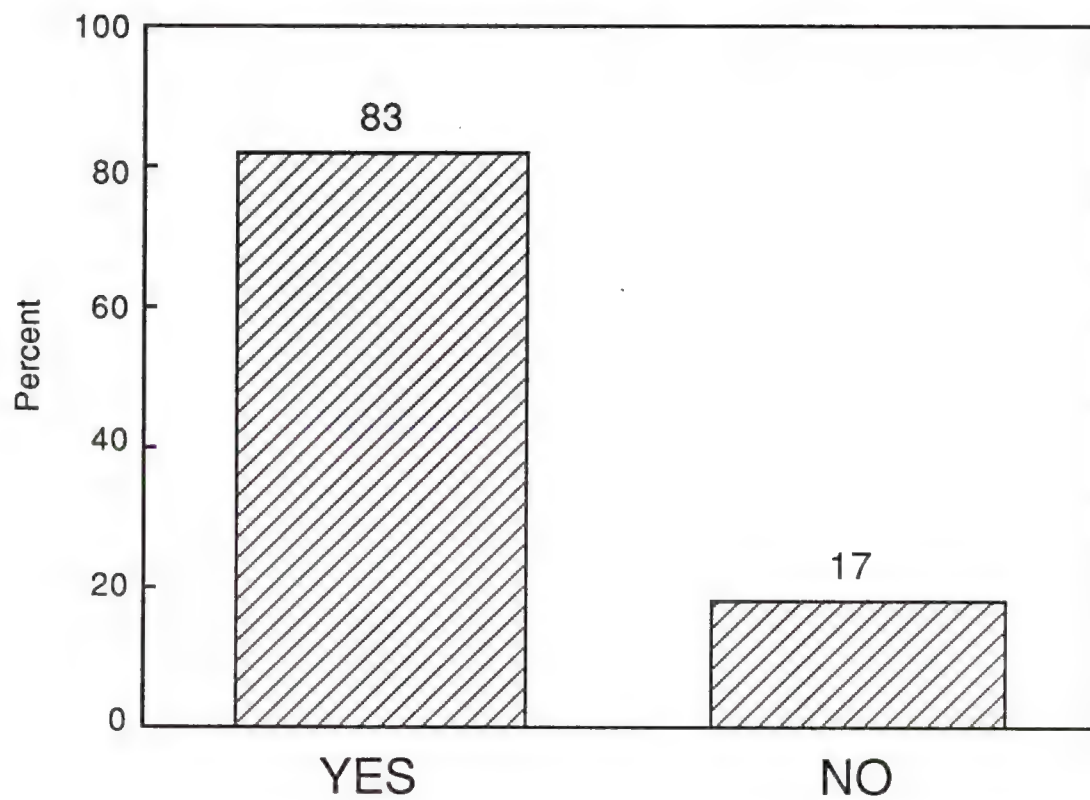
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	7.8	3	10	1.3	79
REGION—1988	8.0	7	10	1.1	11

INPUT





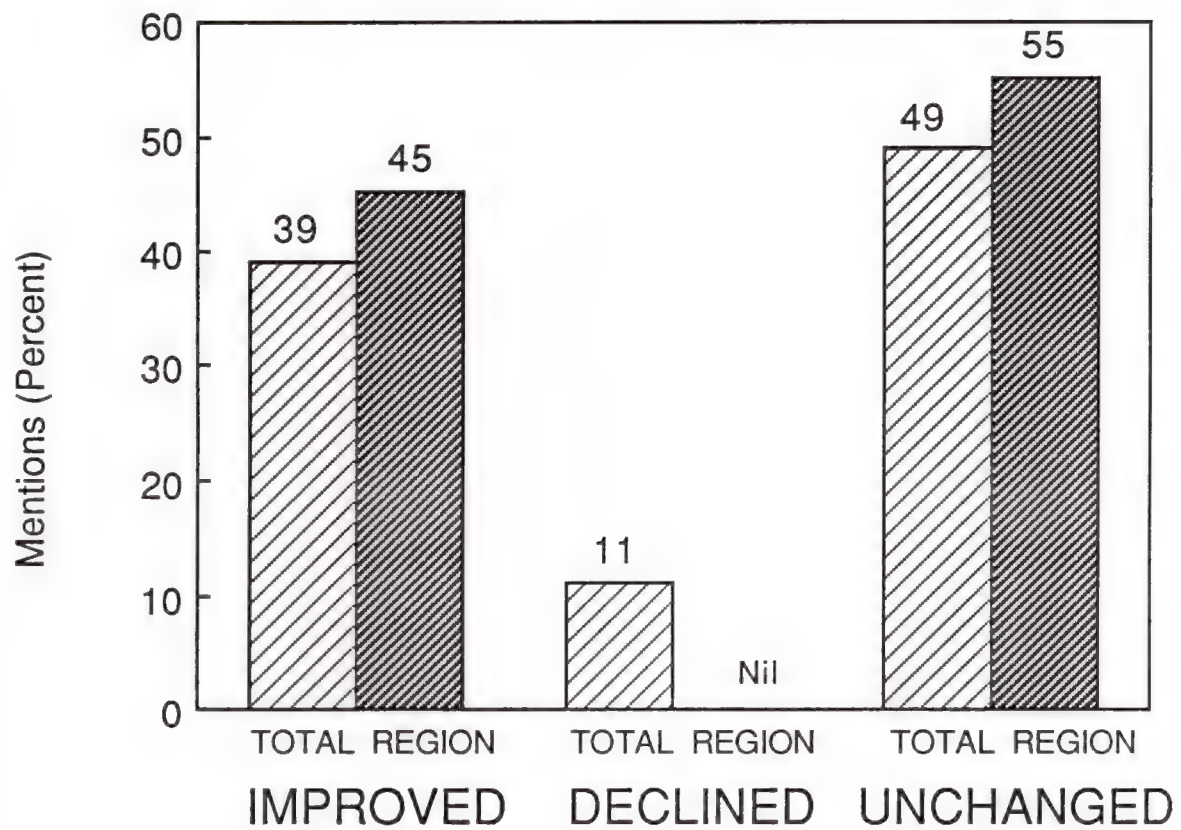
**ENOUGH INTERACTION WITH CRAY  
CORPORATE MANAGEMENT (Q28G)  
(Central Region)**



INPUT



**OVERALL SATISFACTION  
IMPROVED/DECLINED/UNCHANGED  
(Central Region)**



INPUT

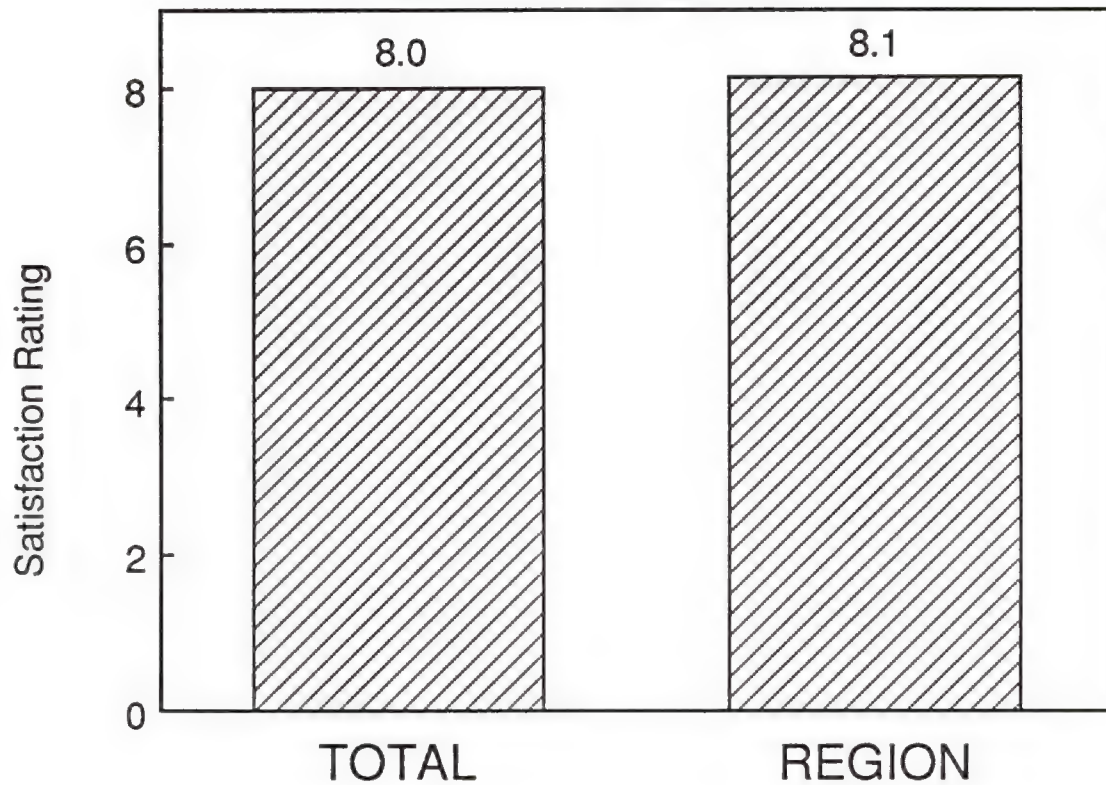


# **EASTERN REGION**

INPUT



## CRAY LIVING UP TO EXPECTATIONS (Eastern Region)



Q25: HOW WELL IS CRAY SYSTEM LIVING UP TO YOUR EXPECTATIONS?

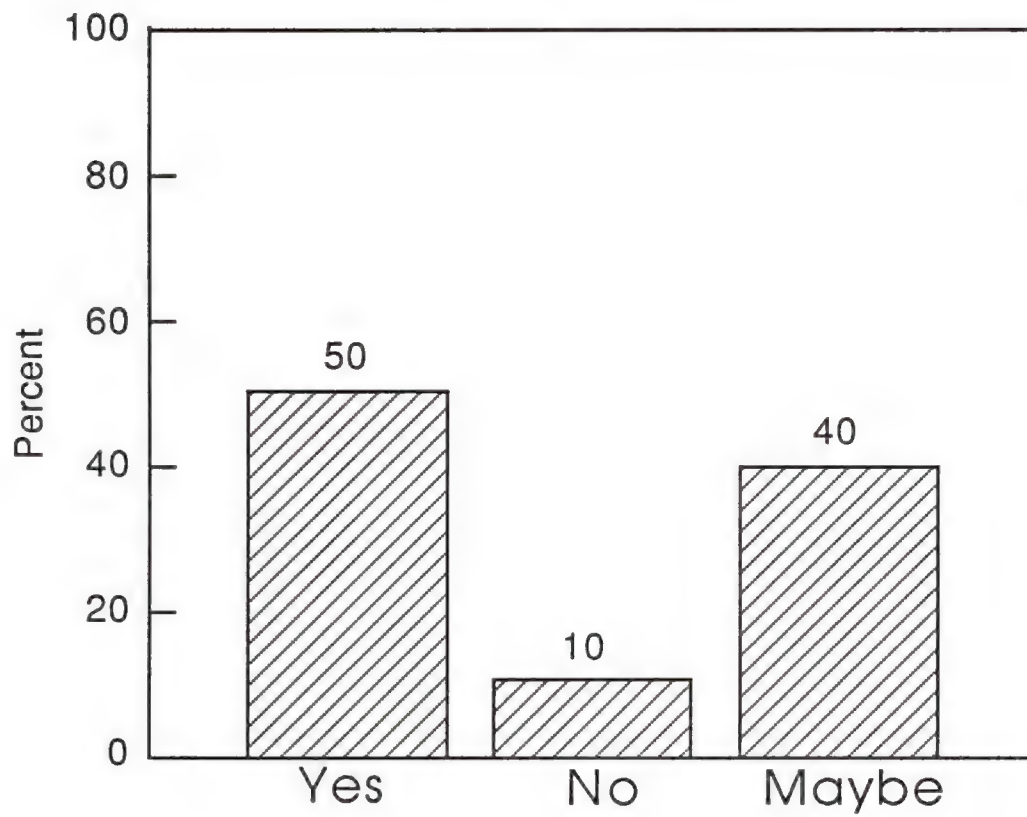
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.0	2	10	1.6	82
REGION—1988	8.1	4	10	1.6	20

INPUT





## BUY CRAY TOMORROW? (Eastern Region)



INPUT



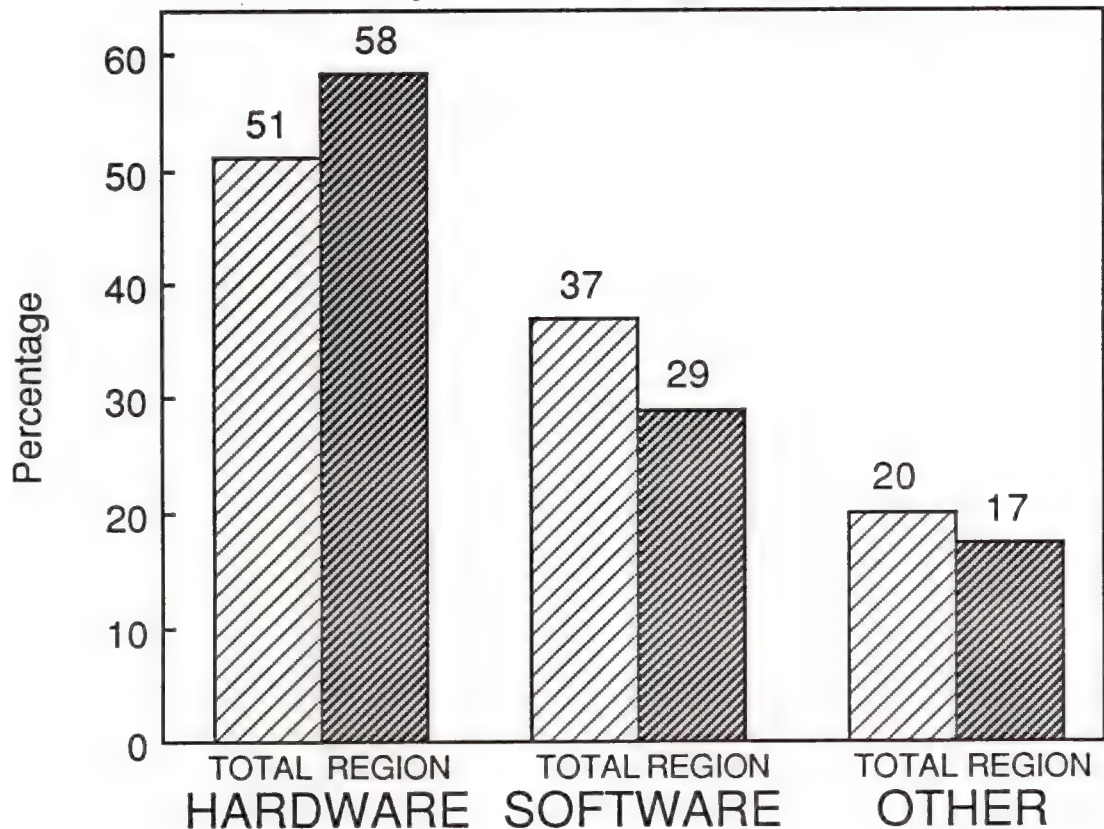
# **DECISION CRITERIA IF BUY TODAY** **(Eastern Region)**

<u>Rank</u>		<u>Decision Importance</u>	<u>Cray Rate</u>
1	Overall Sys. Performance	9.0	8.7
2	Sys. SW Reliability	8.8	7.3
3	Hardware Reliability	8.8	8.1
4	Price Performance	8.7	7.5
5	Network/Connectivity	8.5	7.5
6	Sys. SW Functionality	8.2	7.2
7	Overall System Price	8.1	6.9
7	SW Maint. Support	8.1	8.3
8	Sys. SW Performance	7.9	7.5
9	Sys. SW Usability	7.8	7.3
10	Conversion Ease	7.6	7.0
11	Documentation	7.2	6.3
12	Application Software Avail.	7.1	7.6
13	Training	6.0	6.8

INPUT



## SYSTEM OUTAGE BY CAUSE (Eastern Region)



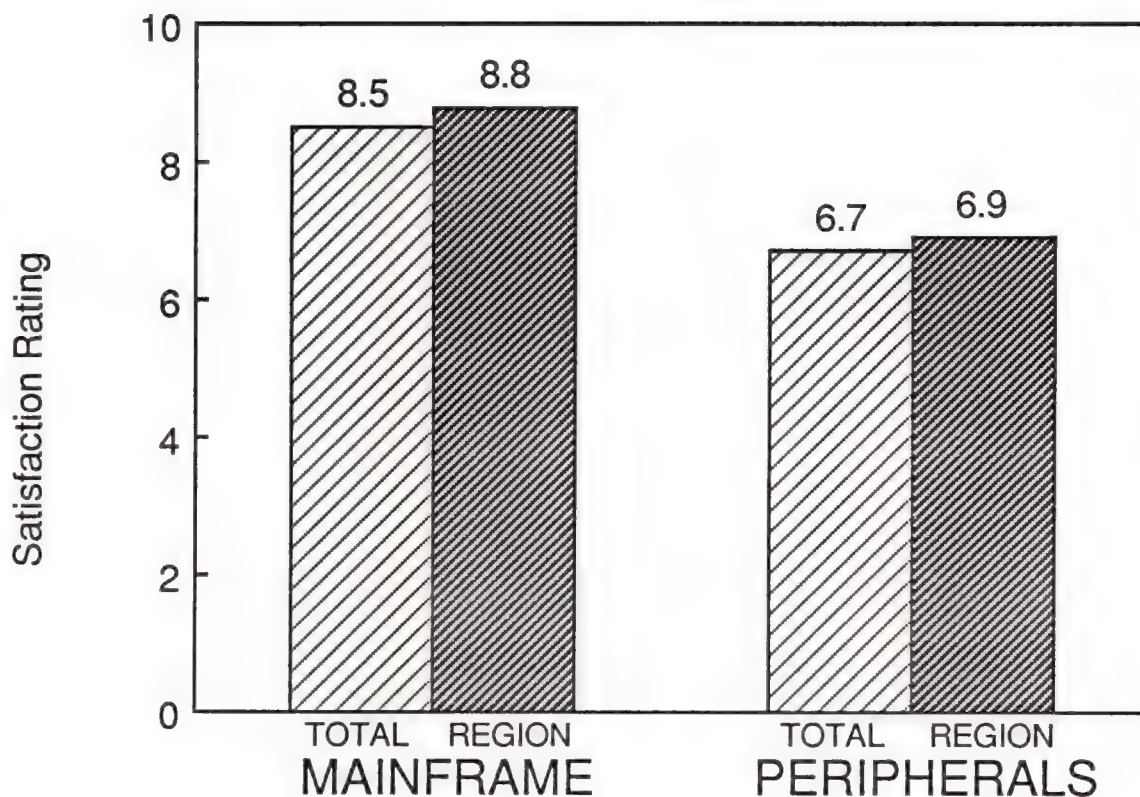
### Q7A, B, C: HARDWARE, SOFTWARE AND OTHER INTERRUPTION

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
HARDWARE					
TOTAL—1988	51	8	100	26.9	76
REGIONAL—1988	58	21	100	24.0	17
SOFTWARE					
TOTAL—1988	37	1	85	24.2	73
REGIONAL—1988	29	5	71	20.7	15
OTHER					
TOTAL—1988	20	2	72	16.7	59
REGIONAL—1988	17	0	60	18.7	16

INPUT



## HARDWARE SATISFACTION MAINFRAME/PERIPHERALS (Eastern Region)



### Q10A, B: MAINFRAME/PERIPHERAL RELIABILITY

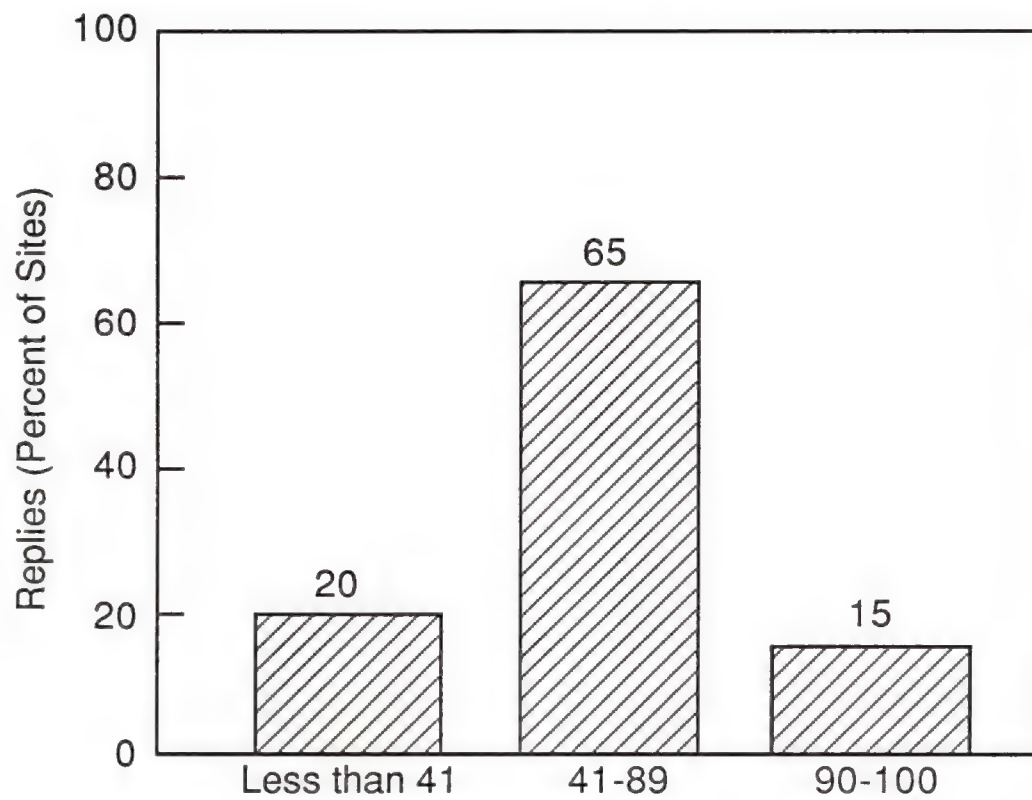
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
MAINFRAME					
TOTAL—1988	8.5	2	10	1.4	83
REGIONAL—1988	8.8	7	10	1.0	20
PERIPHERALS					
TOTAL—1988	6.7	1	10	2.3	83
REGIONAL—1988	6.9	4	10	1.9	20

INPUT





## UTILIZATION PROFILE (Eastern Region)

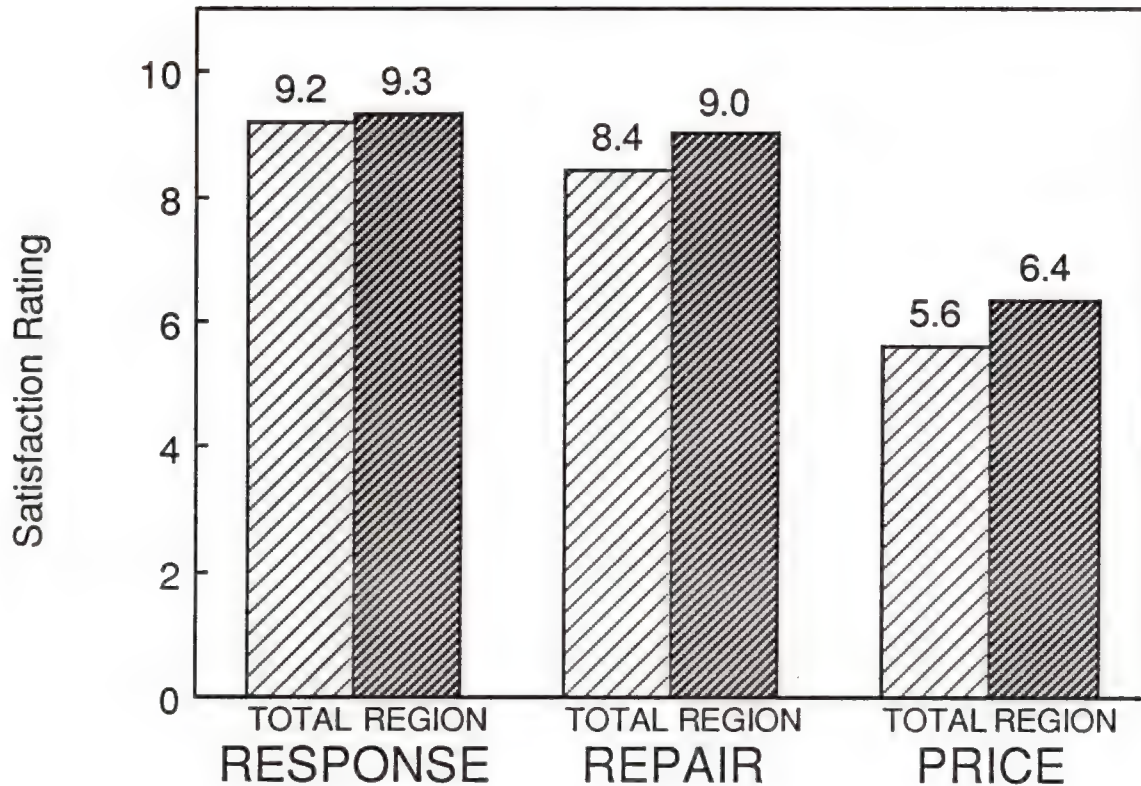


Q6: Average Monthly Utilization for Past 6 Months

INPUT



## MAINTENANCE RESPONSE SATISFACTION (Eastern Region)



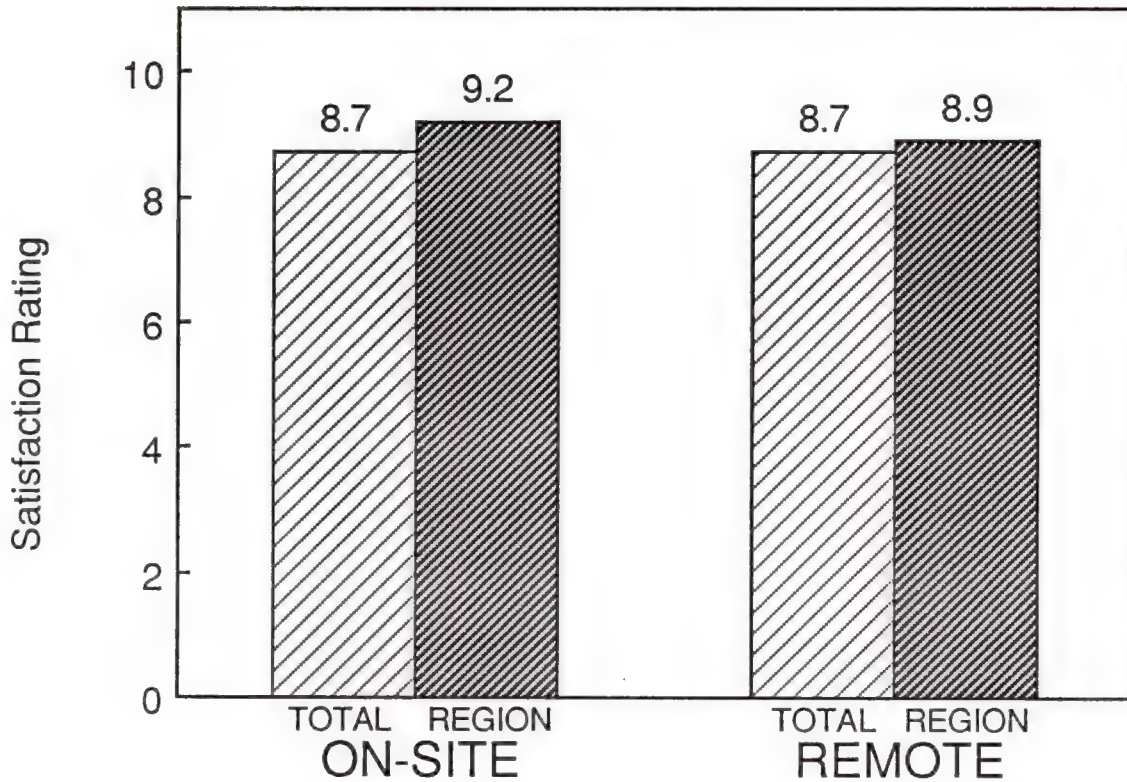
### Q10C. D. E: HARDWARE MAINTENANCE, RESPONSE, REPAIR TIME AND PRICE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RESPONSE					
TOTAL—1988	9.2	6	10	0.9	83
REGIONAL—1988	9.3	7	10	0.8	20
REPAIR					
TOTAL—1988	8.4	3	10	1.6	82
REGIONAL—1988	9.0	6	10	1.1	20
PRICE					
TOTAL—1988	5.6	1	10	2.5	74
REGIONAL—1988	6.4	1	8	2.0	17

INPUT



## ENGINEER SKILL LEVEL (Eastern Region)



Q12E.F: CUSTOMER ENGINEER SKILL LEVEL RATINGS

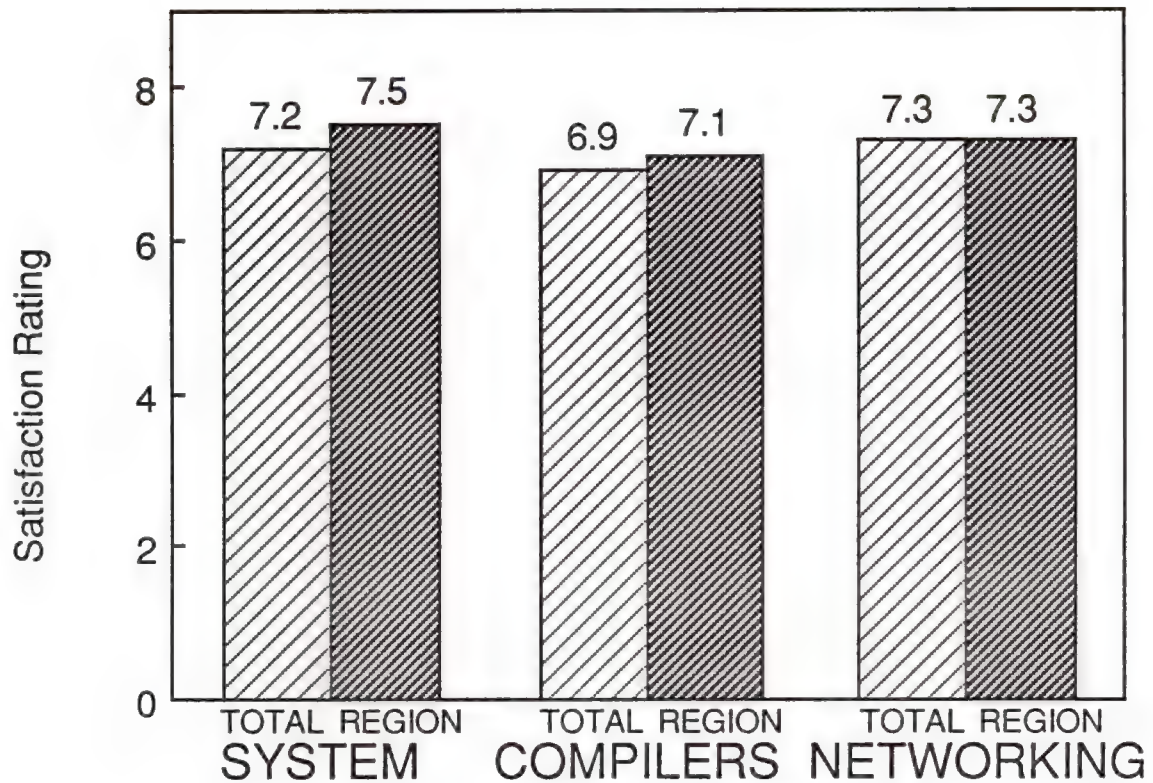
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
ON-SITE					
TOTAL—1988	8.7	6	10	1.2	87
REGIONAL—1988	9.2	7	10	0.9	20
REMOTE					
TOTAL—1988	8.7	5	10	1.1	75
REGIONAL—1988	8.9	5	10	1.2	17

INPUT





## SOFTWARE RELIABILITY (Eastern Region)



### Q13A, B, D: SYSTEM SOFTWARE

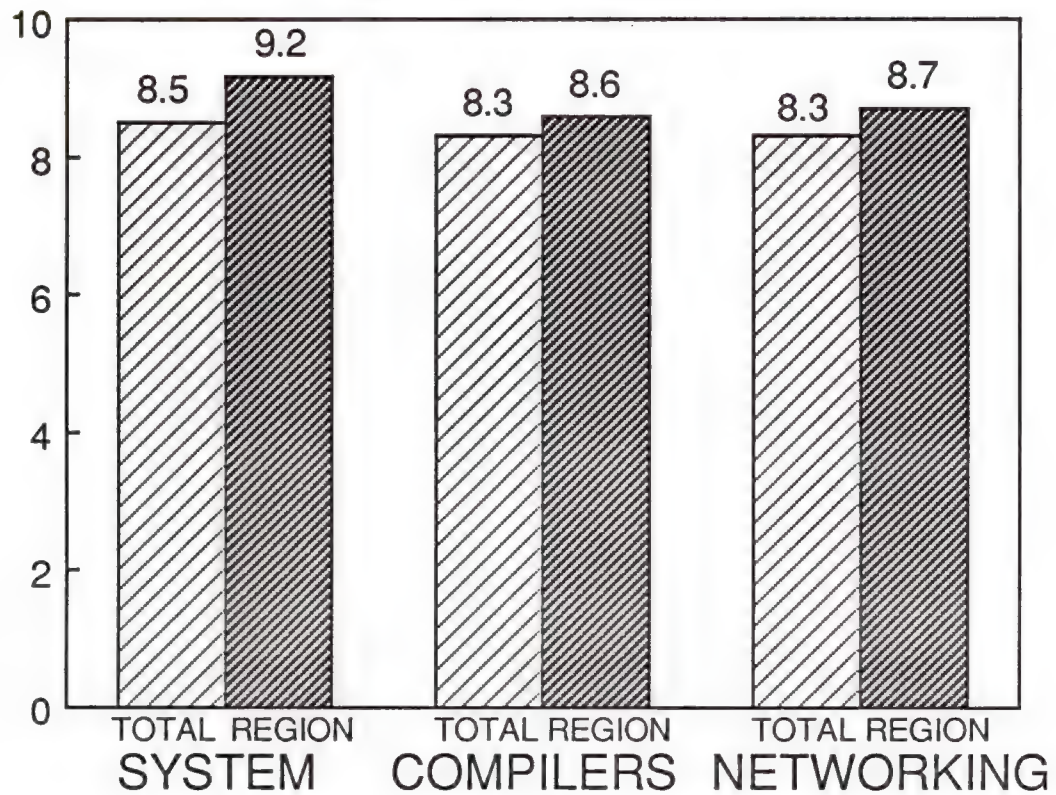
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	7.2	1	10	2.0	78
REGIONAL—1988	7.5	3	10	1.9	19
COMPILERS (Fortran)					
TOTAL—1988	6.9	3	10	1.7	81
REGIONAL—1988	7.1	3	10	2.0	19
NETWORKING					
TOTAL—1988	7.3	3	10	2.0	26
REGIONAL—1988	7.3	4	10	1.6	8

INPUT





# SOFTWARE SUPPORT RATINGS LOCAL SITE SUPPORT (Eastern Region)



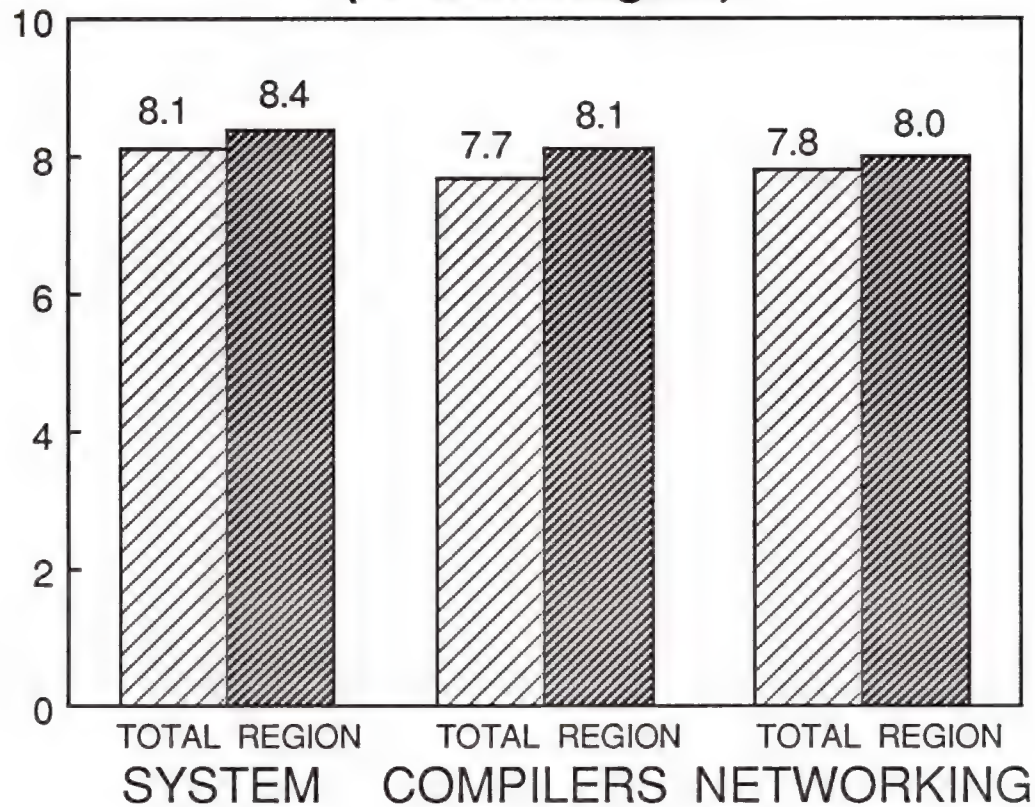
## Q18A,B,D: SOFTWARE SUPPORT RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	8.5	3	10	1.7	75
REGIONAL—1988	9.2	7	10	0.9	19
COMPILERS (Fortran)					
TOTAL—1988	8.3	3	10	1.8	72
REGIONAL—1988	8.6	4	10	1.7	18
NETWORKING					
TOTAL—1988	8.3	3	10	1.9	35
REGIONAL—1988	8.7	4	10	1.9	10

INPUT



## SOFTWARE SUPPORT RATINGS FIELD SUPPORT (Eastern Region)



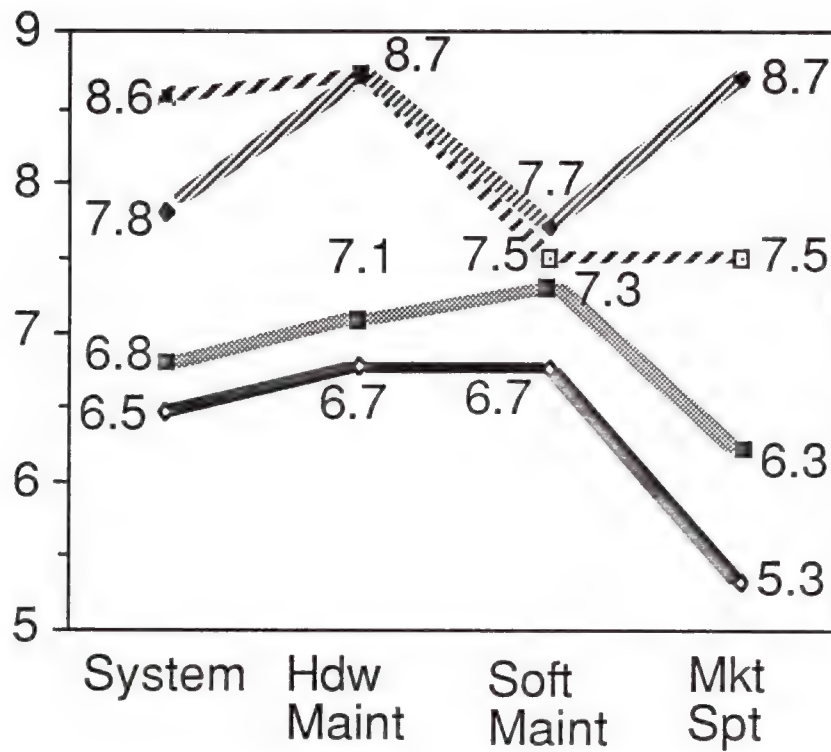
Q18A,B,D: SOFTWARE SUPPORT RATING

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SOFTWARE					
TOTAL—1988	8.1	4	10	1.4	47
REGIONAL—1988	8.4	6	10	1.2	9
COMPILERS (FORTRAN)					
TOTAL—1988	7.7	3	10	1.6	46
REGIONAL—1988	8.1	6	10	1.1	9
NETWORKING					
TOTAL—1988	7.8	4	10	1.5	24
REGIONAL—1988	8.0	6	10	1.4	5

INPUT



## VENDOR COMPARISON (Eastern Region)

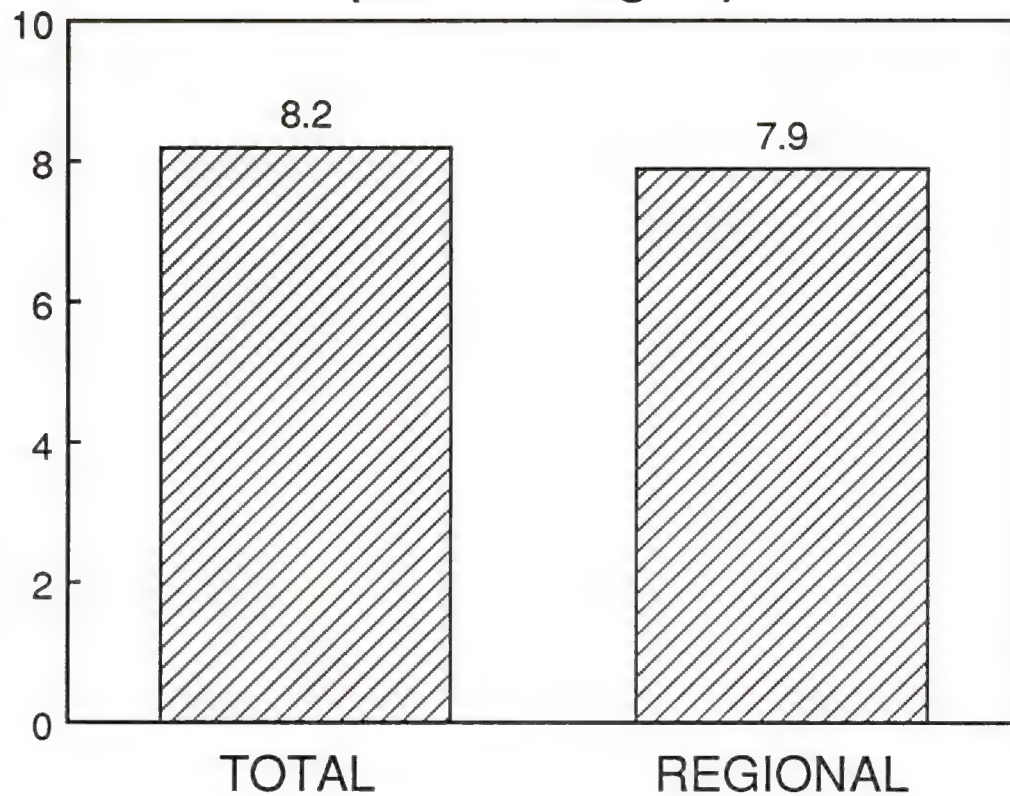


- - - - - Cray  
 / / / / / IBM  
 x x x x x DEC  
 ———— CDC

INPUT



# **MARKETING REPRESENTATIVE HELPLEFULNESS (Eastern Region)**



## Q28D: HELPLEFULNESS OF CRAY LOCAL MARKETING REPRESENTATIVE

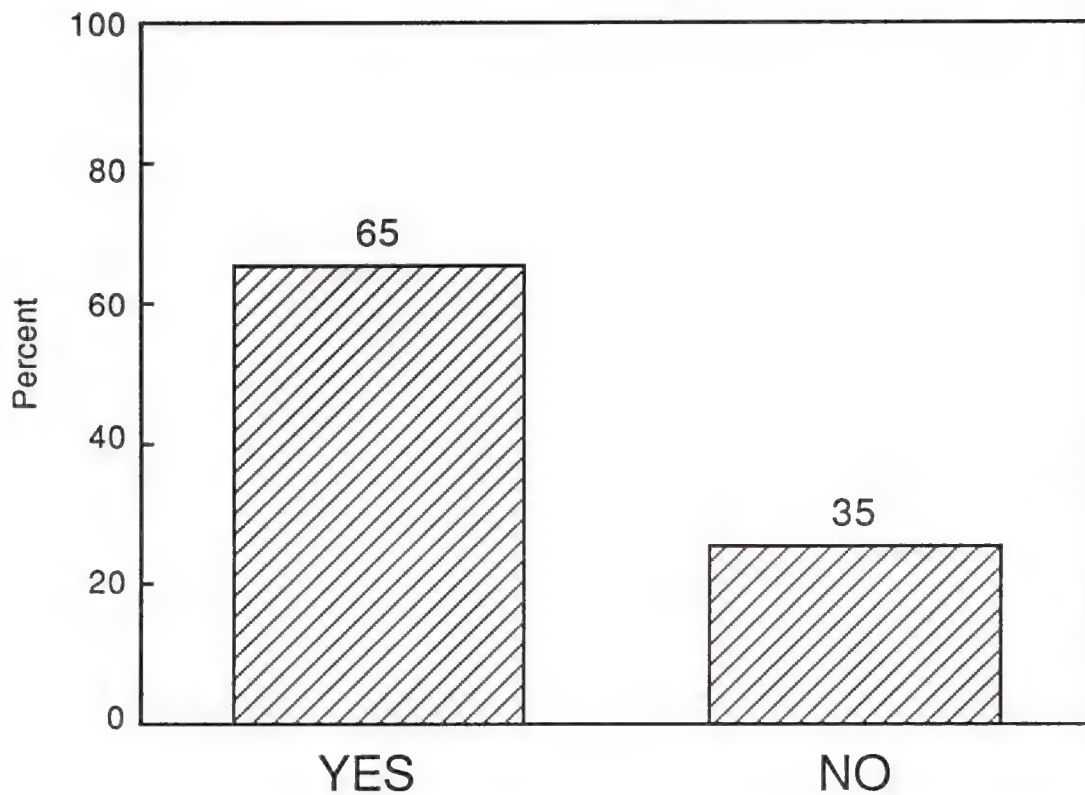
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.2	3	10	1.7	80
REGION—1988	7.9	4	10	1.7	20

INPUT





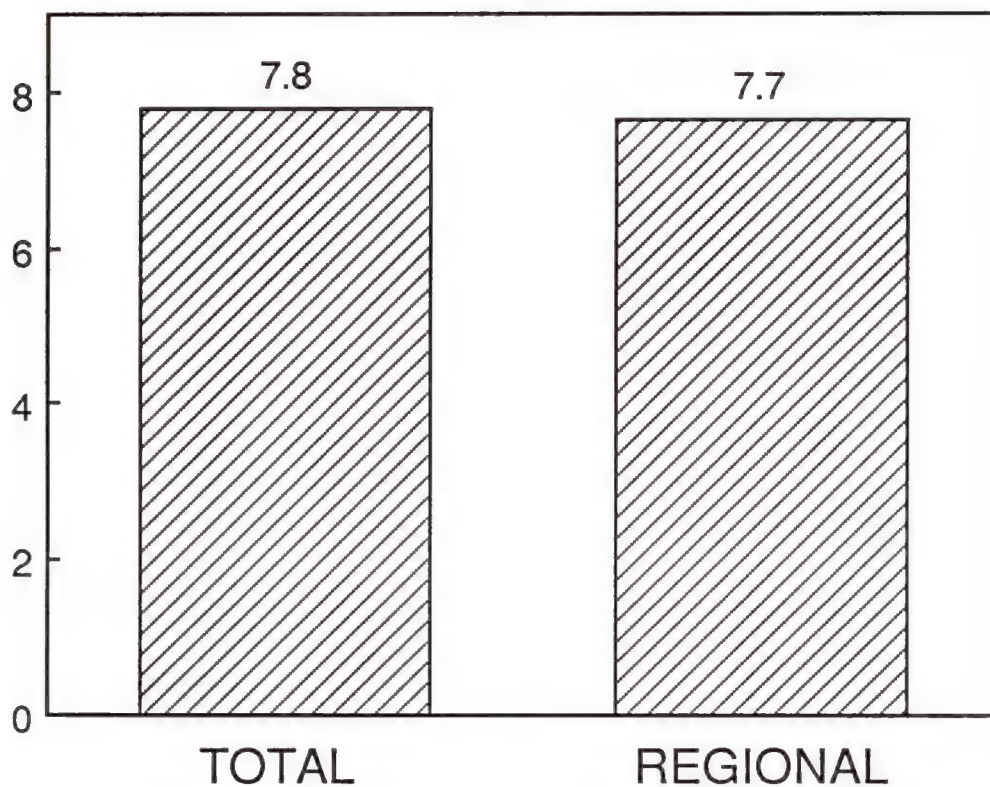
**KEPT AWARE ENOUGH OF CRAY'S  
HARDWARE/SOFTWARE DIRECTIONS (Q29)  
(Eastern Region)**



INPUT



## USER SATISFACTION WITH SYSTEM (Eastern Region)



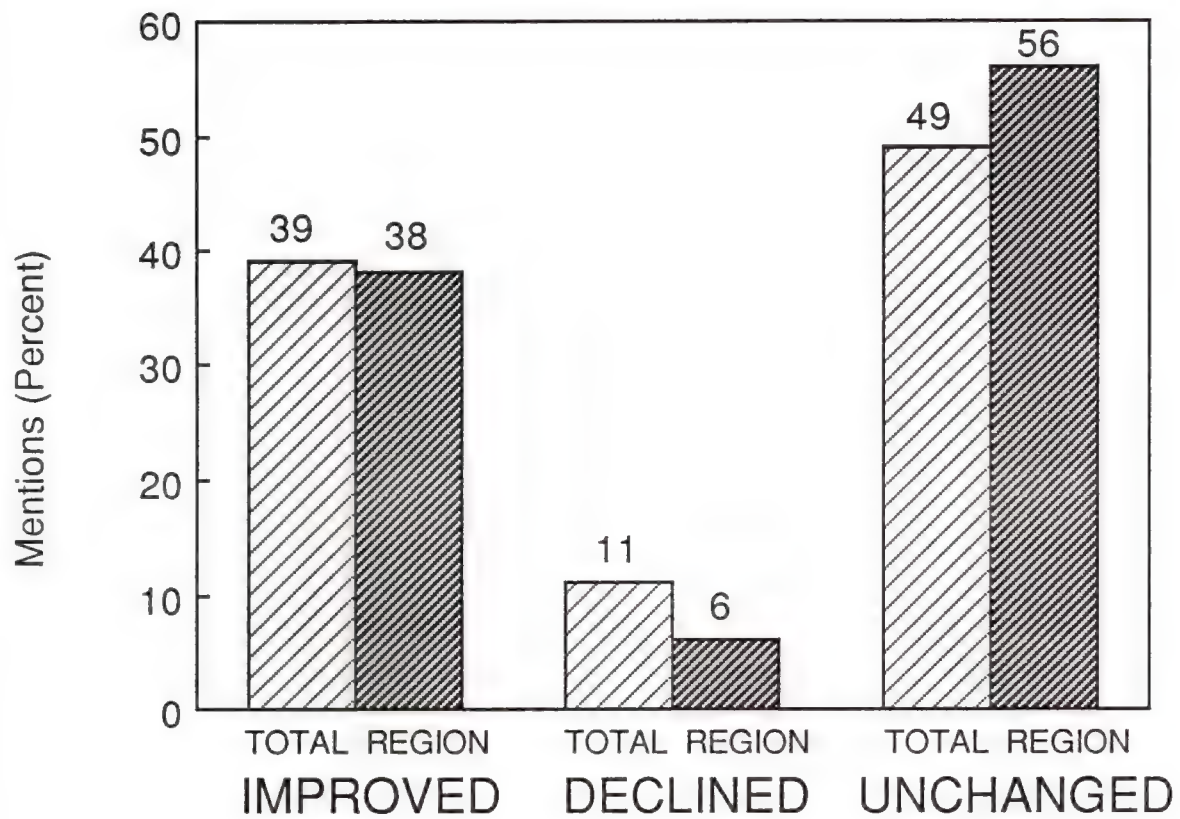
Q32B: HOW DO USERS RATE SATISFACTION WITH SYSTEM?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	7.8	3	10	1.3	79
REGION—1988	7.7	4	10	1.4	19

INPUT



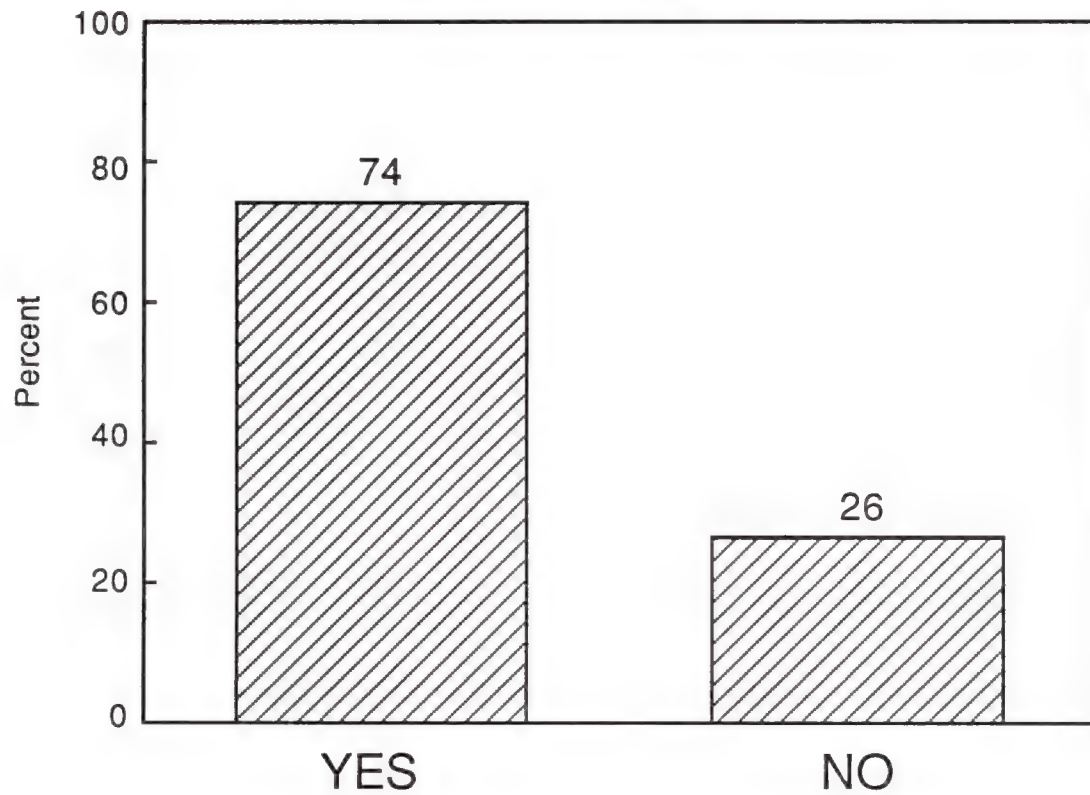
# OVERALL SATISFACTION IMPROVED/DECLINED/UNCHANGED (Eastern Region)



INPUT



**ENOUGH INTERACTION WITH CRAY  
CORPORATE MANAGEMENT (Q28G)**  
(Eastern Region)



INPUT



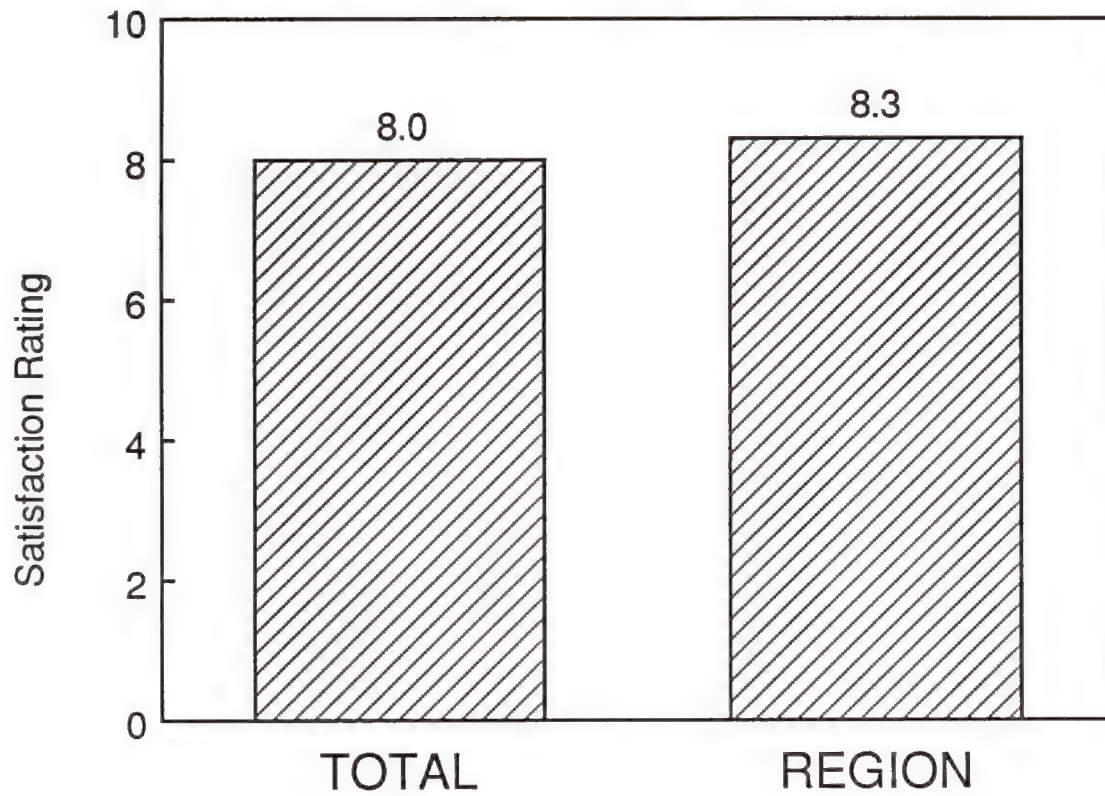


# **SOUTHERN REGION**

INPUT



## CRAY LIVING UP TO EXPECTATIONS (Southern Region)



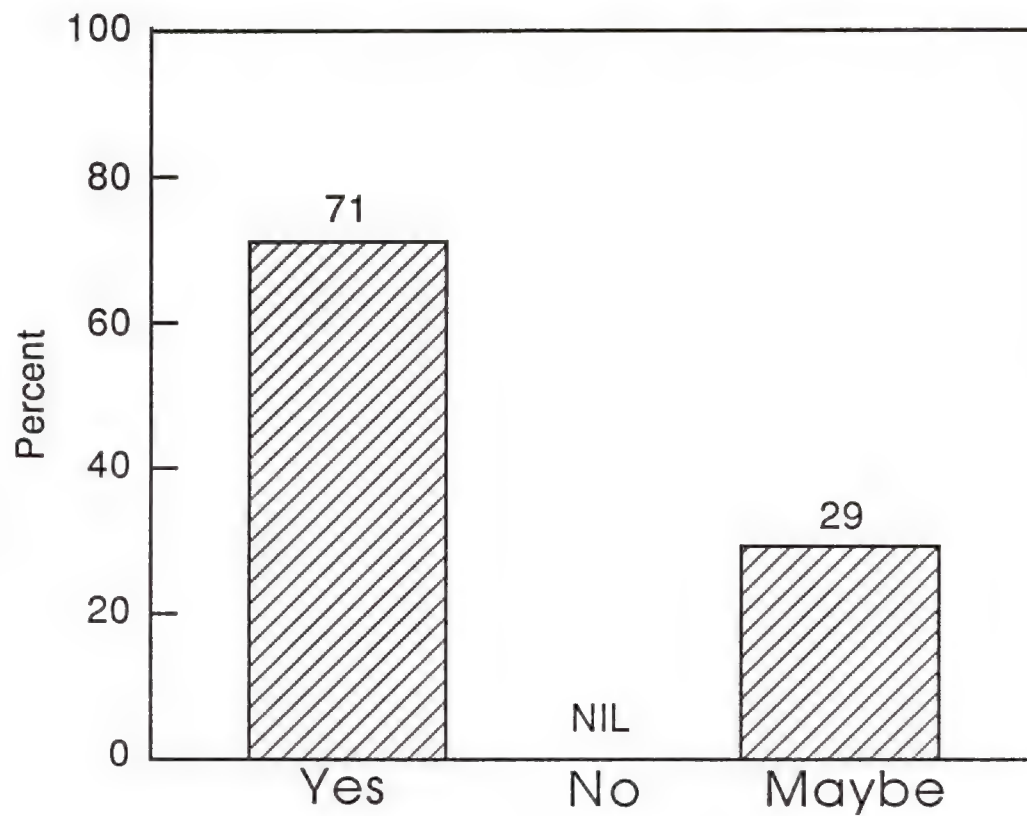
Q25: HOW WELL IS CRAY SYSTEM LIVING UP TO YOUR EXPECTATIONS?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.0	2	10	1.5	83
REGION—1988	8.3	7	10	0.8	12

INPUT



### BUY CRAY TOMORROW? (Southern Region)



INPUT



**DECISION CRITERIA IF BUY TODAY  
(Southern Region)**

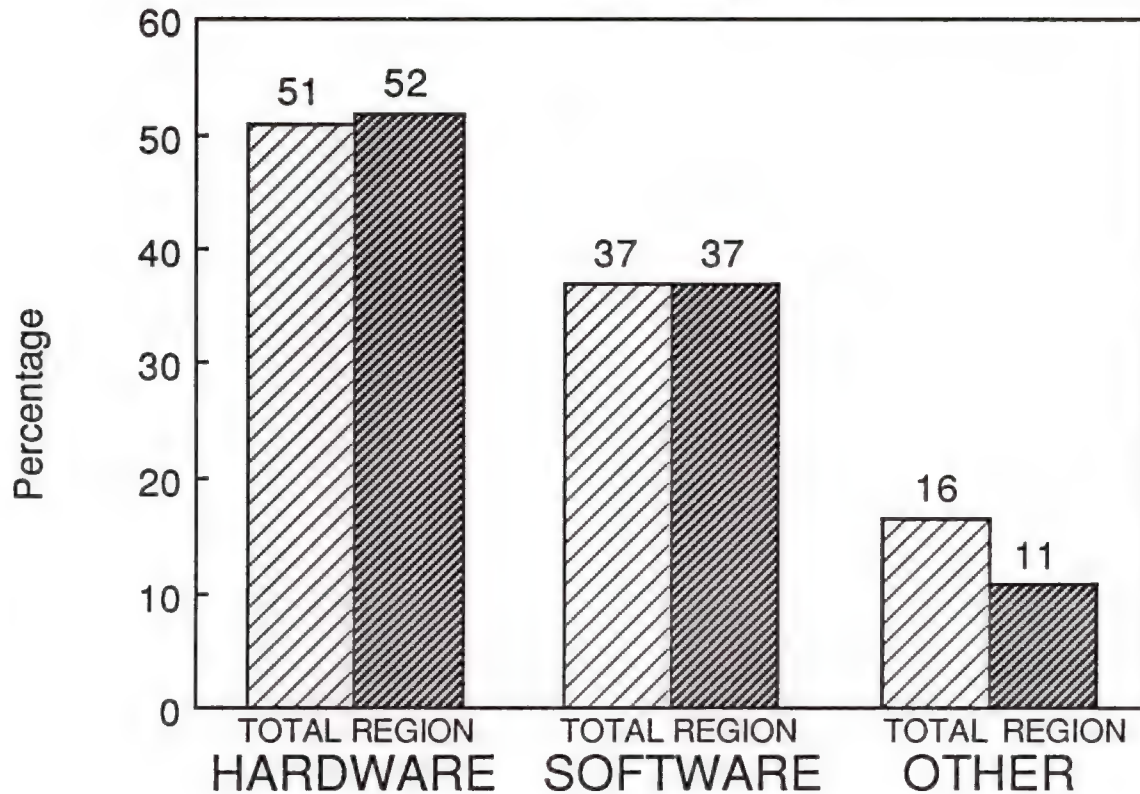
<u>Rank</u>		<u>Decision Importance</u>	<u>Cray Rate</u>
1	Hardware Reliability	9.2	6.7
2	Overall Sys. Performance	8.9	7.5
2	Sys. SW Reliability	8.9	7.0
3	Software Maint. Support	8.8	7.5
4	Sys. SW Functionality	8.3	6.5
5	Sys. SW Performance	8.2	7.2
6	Price Performance	8.0	7.6
7	Overall Sys. Price	7.8	7.2
7	Sys. SW Usability	7.8	7.5
8	Networking/Connectivity	7.7	7.1
9	Conversion Ease	7.6	7.0
10	Documentation	7.2	7.2
11	Application Software Avail.	6.7	7.2
12	Training	6.3	7.2

INPUT





## SYSTEM OUTAGE BY CAUSE (Southern Region)



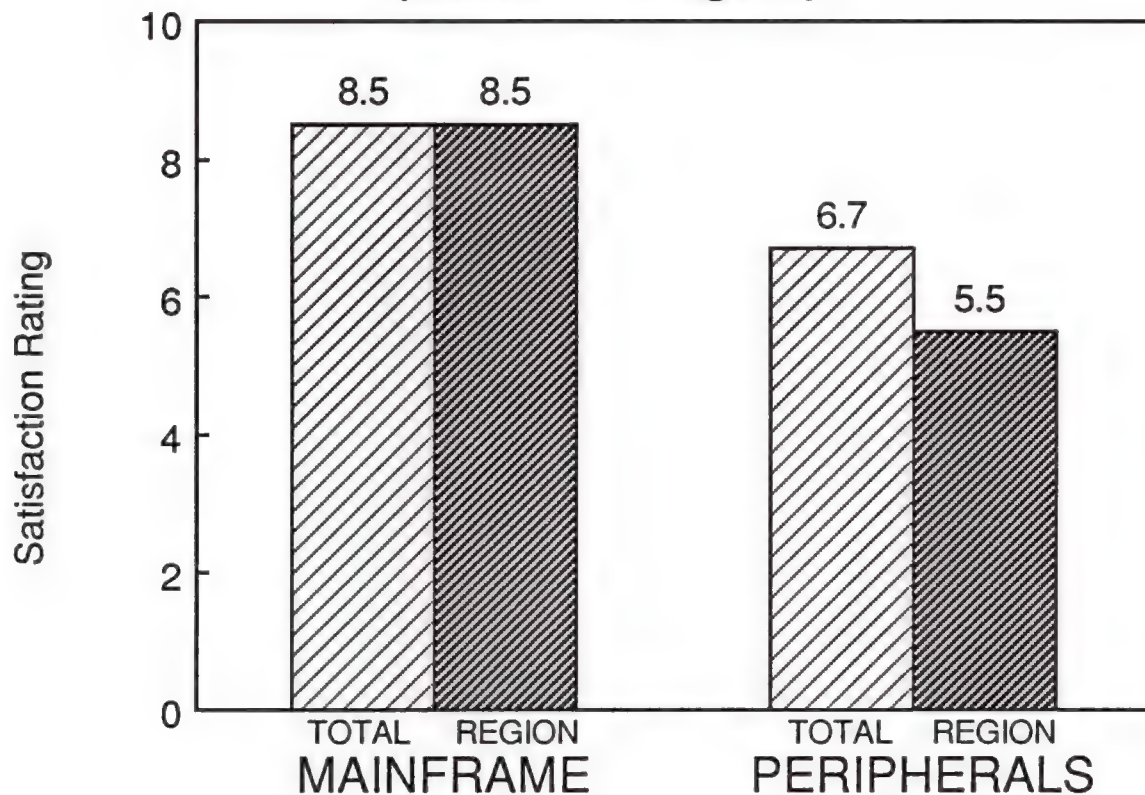
### Q7A. B. C: HARDWARE, SOFTWARE AND OTHER INTERRUPTION

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
HARDWARE					
TOTAL—1988	51	8	100	26.9	77
REGIONAL—1988	52	10	95	27.4	13
SOFTWARE					
TOTAL—1988	37	1	85	23.7	73
REGIONAL—1988	37	5	85	26.0	13
OTHER					
TOTAL—1988	16	0	72	16.7	74
REGIONAL—1988	11	0	46	12.6	13

INPUT



## HARDWARE SATISFACTION MAINFRAME/PERIPHERALS (Southern Region)



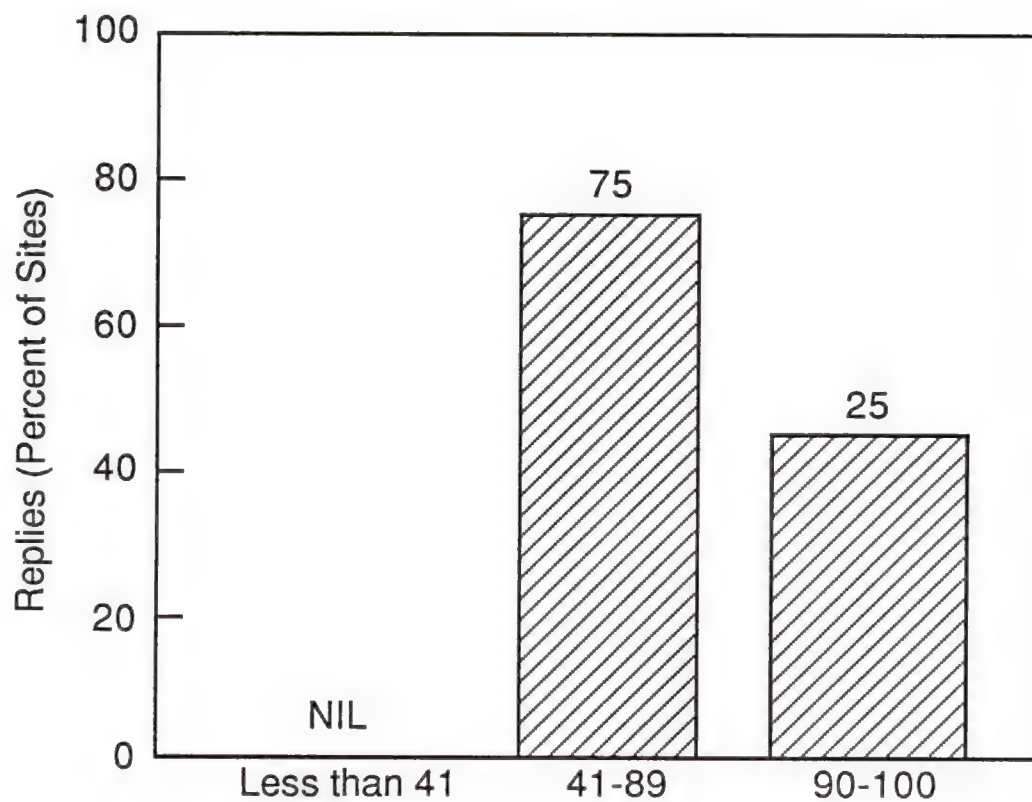
### Q10A, B: MAINFRAME/PERIPHERAL RELIABILITY

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
MAINFRAME					
TOTAL—1988	8.5	2	10	1.4	83
REGIONAL—1988	8.5	6	10	1.2	13
PERIPHERALS					
TOTAL—1988	6.7	1	10	2.3	83
REGIONAL—1988	5.5	1	10	3.2	13

INPUT



## UTILIZATION PROFILE (Southern Region)

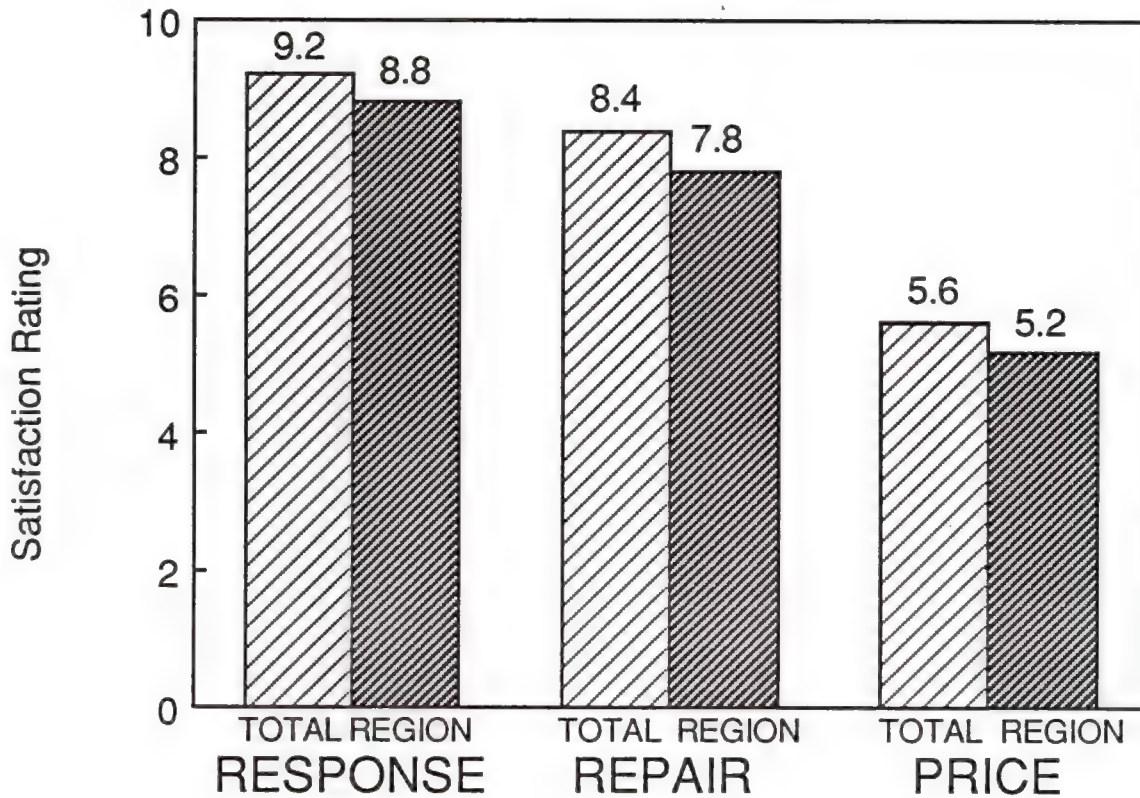


Q6: Average Monthly Utilization for Past 6 Months

INPUT



## MAINTENANCE RESPONSE SATISFACTION (Southern Region)



### Q10C, D, E: HARDWARE MAINTENANCE, RESPONSE, REPAIR TIME AND PRICE

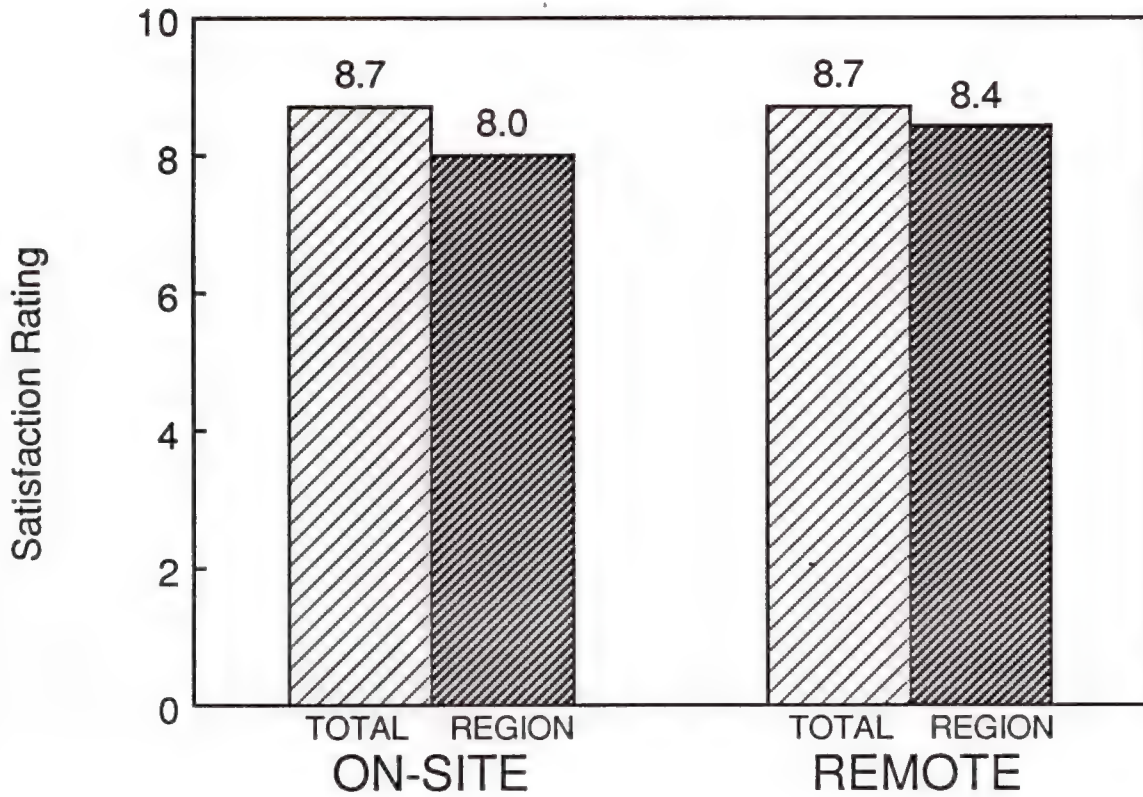
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RESPONSE					
TOTAL—1988	9.2	6	10	0.9	83
REGIONAL—1988	8.8	8	10	0.8	13
REPAIR					
TOTAL—1988	8.4	3	10	1.6	82
REGIONAL—1988	7.8	4	10	1.8	13
PRICE					
TOTAL—1988	5.6	1	10	2.5	74
REGIONAL—1988	5.2	2	8	2.0	13

INPUT





## ENGINEER SKILL LEVEL (Southern Region)



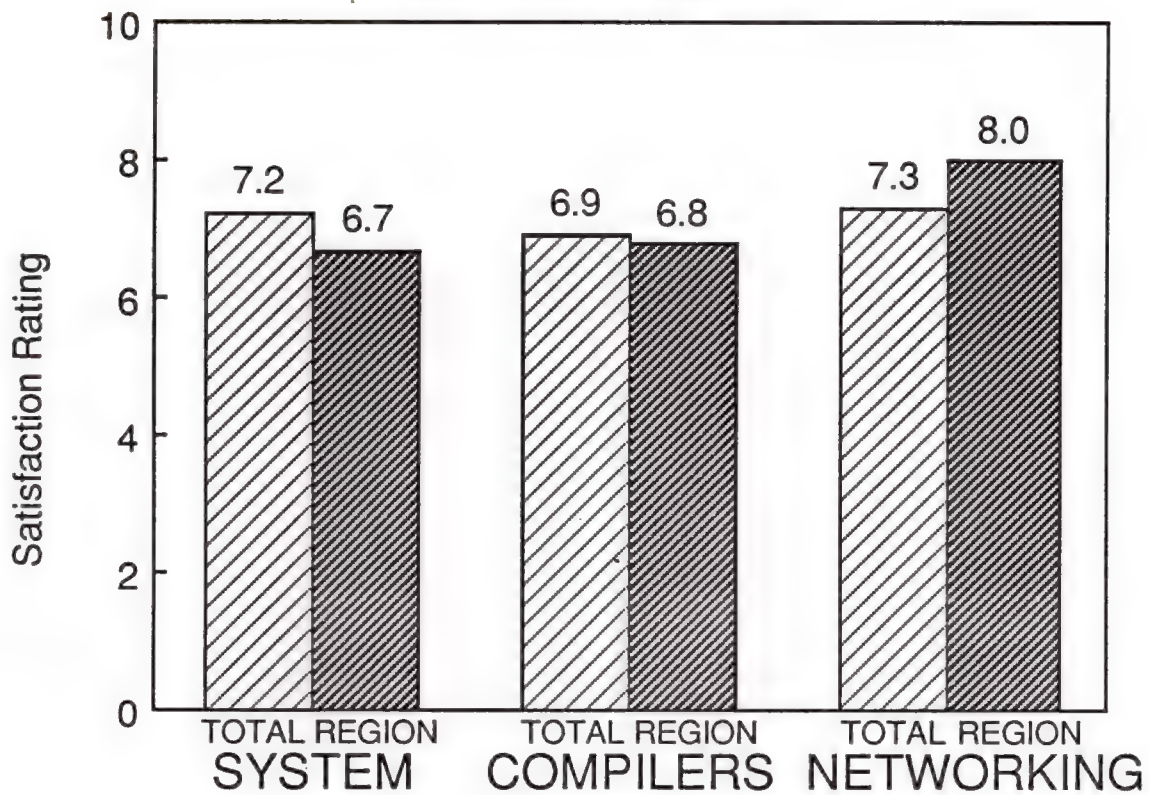
### Q12E.F: CUSTOMER ENGINEER SKILL LEVEL RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
ON-SITE					
TOTAL—1988	8.7	6	10	1.2	88
REGIONAL—1988	8.0	6	10	1.2	13
REMOTE					
TOTAL—1988	8.7	5	10	1.1	75
REGIONAL—1988	8.4	7	10	1.0	13

INPUT



## SOFTWARE RELIABILITY (Southern Region)



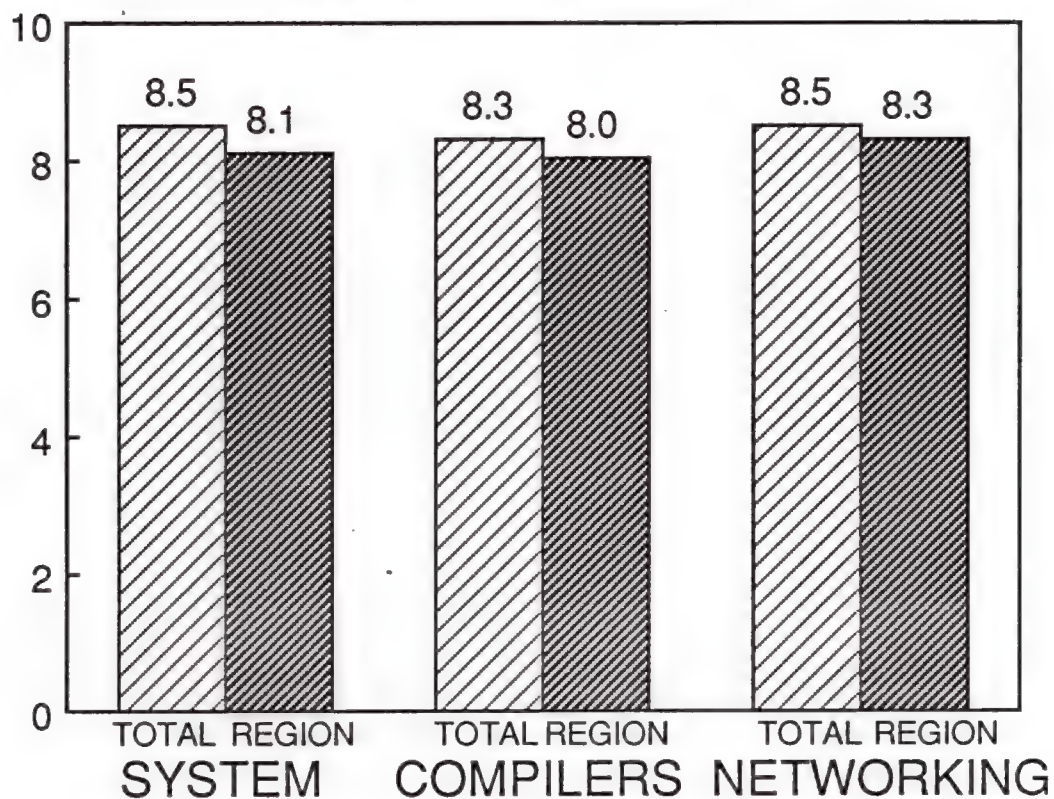
### Q13A, B, D: SYSTEM SOFTWARE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	7.2	1	10	2.0	78
REGIONAL—1988	6.7	2	10	2.3	12
COMPILERS (Fortran)					
TOTAL—1988	6.9	3	10	1.7	81
REGIONAL—1988	6.8	4	9	1.9	12
NETWORKING					
TOTAL—1988	7.3	3	10	2.0	26
REGIONAL—1988	8.0	8	8	0.0	2

INPUT



# **SOFTWARE SUPPORT RATINGS** **LOCAL SITE SUPPORT** **(Southern Region)**



Q18A. B. D: SOFTWARE SUPPORT RATINGS

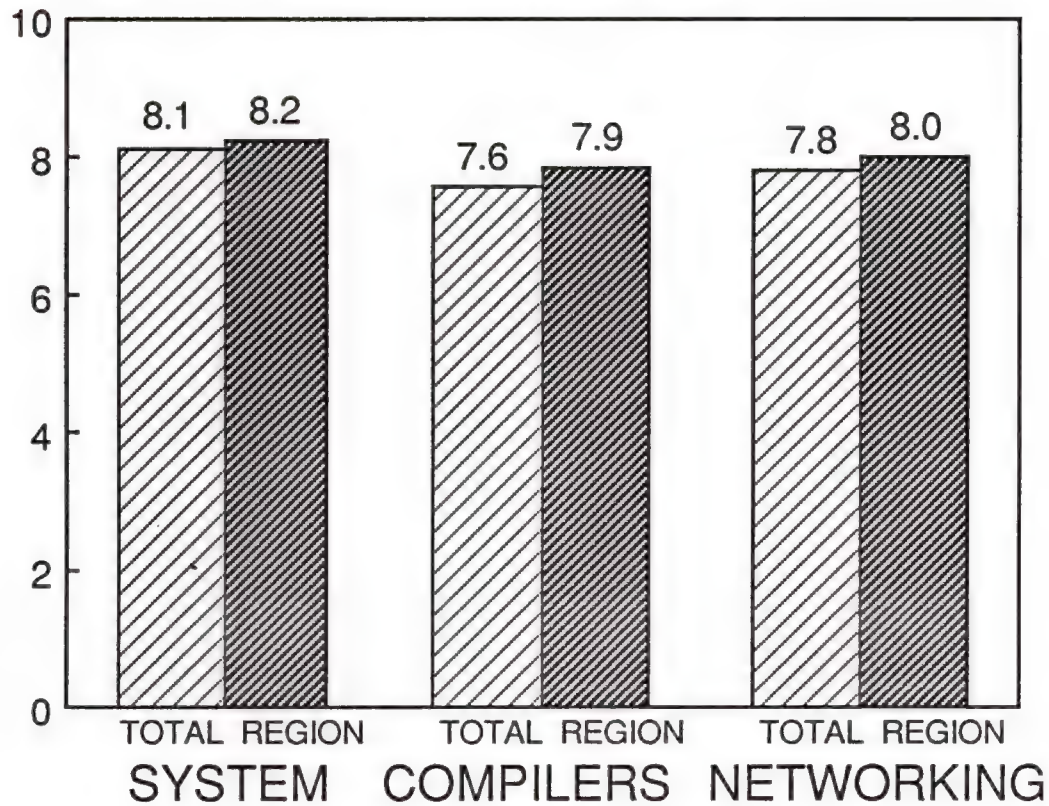
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	8.5	3	10	1.7	75
REGIONAL—1988	8.1	3	10	2.2	11
COMPILERS (Fortran)					
TOTAL—1988	8.3	3	10	1.8	72
REGIONAL—1988	8.0	5	10	1.9	10
NETWORKING					
TOTAL—1988	8.5	3	10	1.9	35
REGIONAL—1988	8.3	7	10	1.5	3

INPUT





# SOFTWARE SUPPORT RATINGS FIELD SUPPORT (Southern Region)



## Q18A,B,D: SOFTWARE SUPPORT RATING

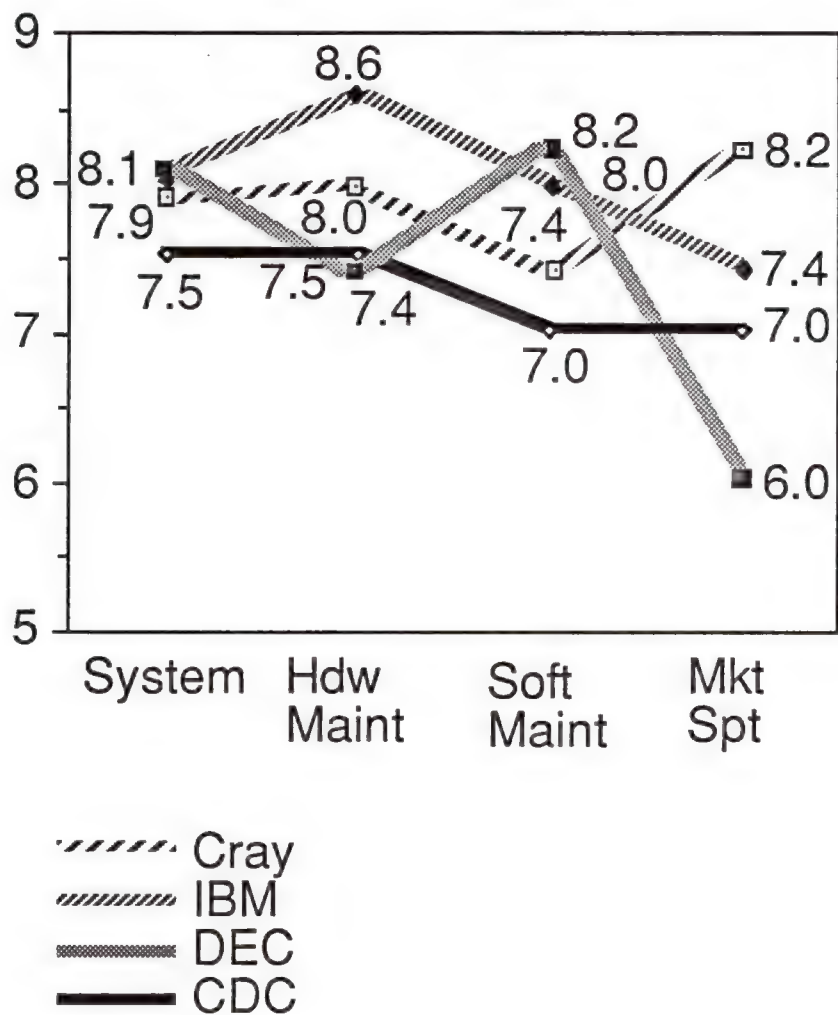
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SOFTWARE					
TOTAL—1988	8.1	4	10	1.4	47
REGIONAL—1988	8.2	6	10	1.4	10
COMPILERS (FORTRAN)					
TOTAL—1988	7.6	3	10	1.6	46
REGIONAL—1988	7.9	6	10	1.5	8
NETWORKING					
TOTAL—1988	7.8	4	10	1.5	24
REGIONAL—1988	8.0	7	10	1.7	3

INPUT





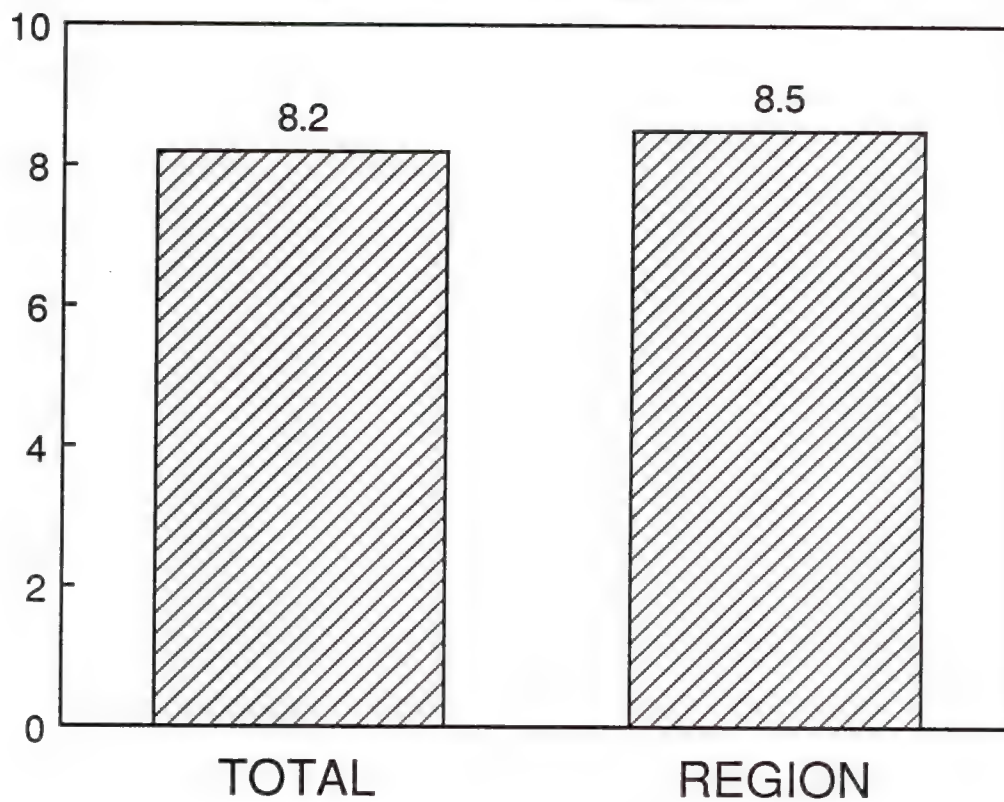
## VENDOR COMPARISONS (Southern Region)



INPUT



# MARKETING REPRESENTATIVE HELPFULNESS (Southern Region)



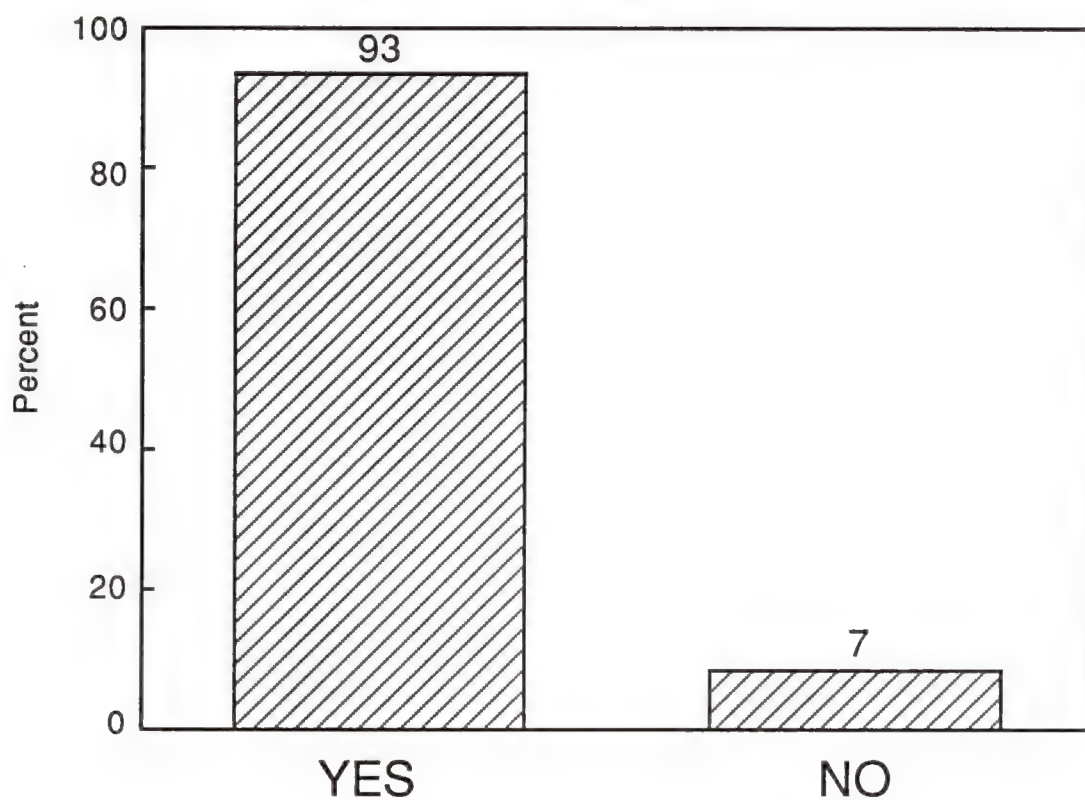
## Q28D: HELPFULNESS OF CRAY LOCAL MARKETING REPRESENTATIVE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.2	3	10	1.7	80
REGION—1988	8.5	5	10	1.2	13

INPUT



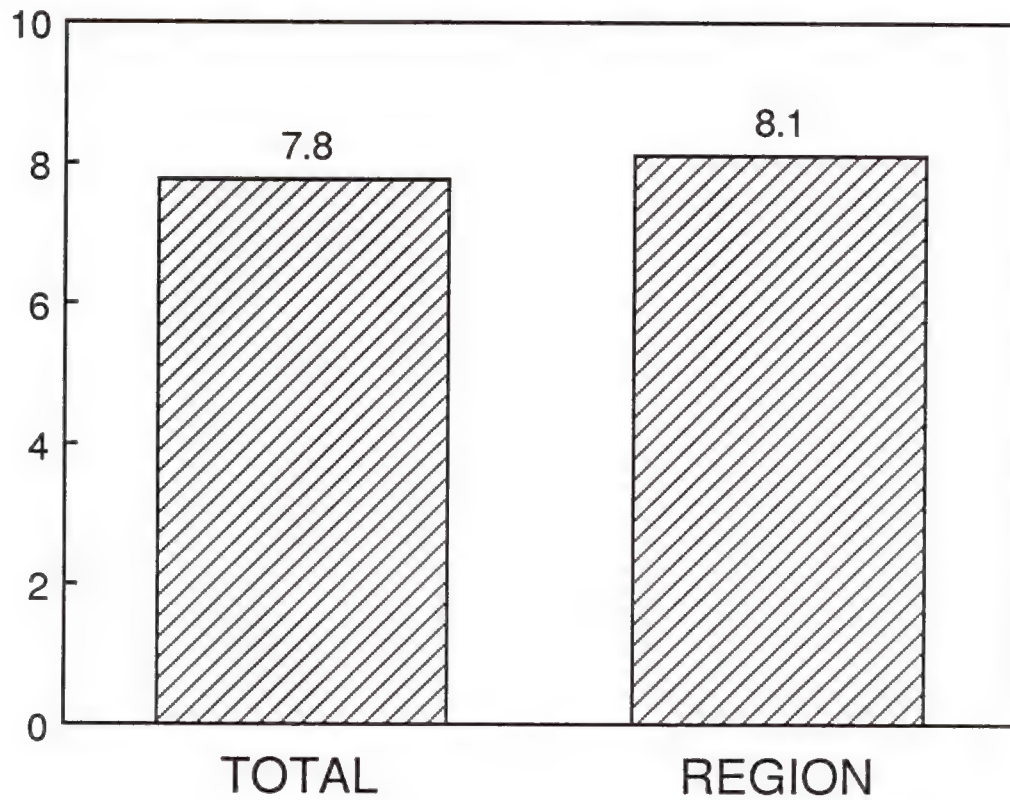
**KEPT AWARE ENOUGH OF CRAY'S  
HARDWARE/SOFTWARE DIRECTIONS (Q29)  
(Southern Region)**



INPUT



## USER SATISFACTION WITH SYSTEM (Southern Region)



Q32B: HOW DO USERS RATE SATISFACTION WITH SYSTEM?

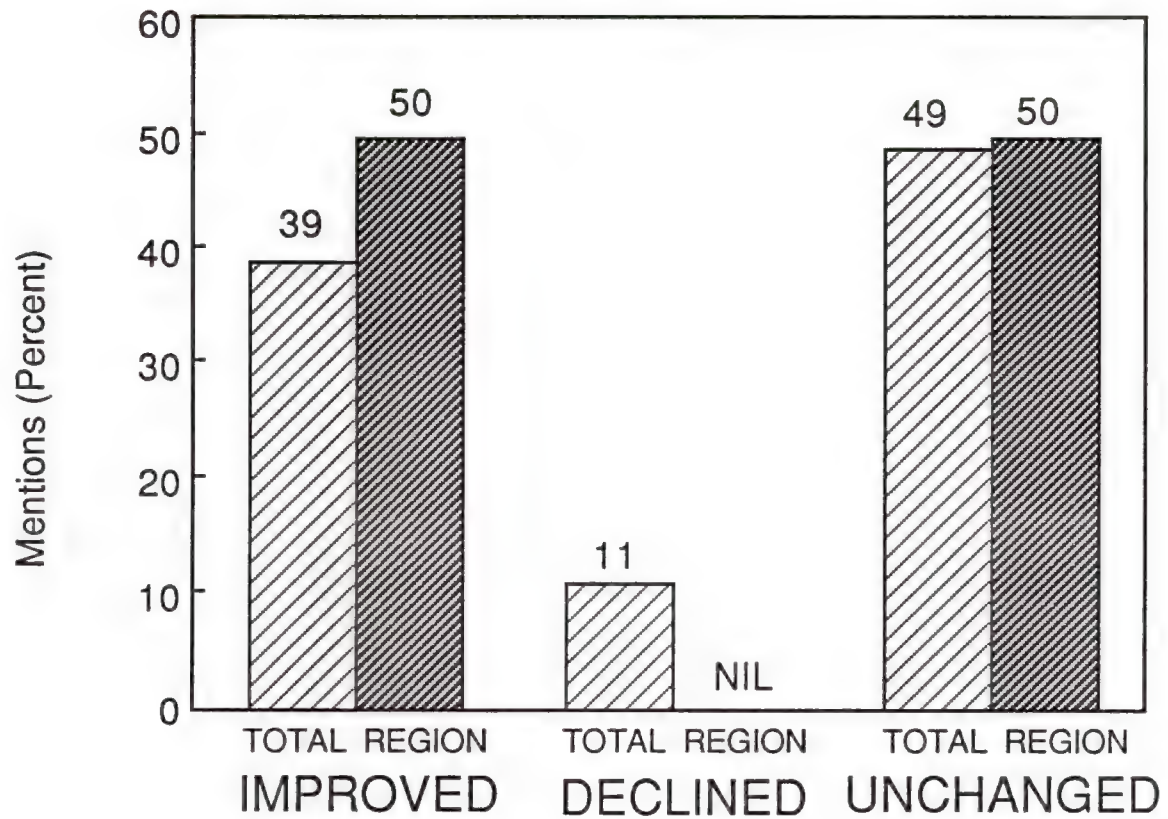
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	7.8	3	10	1.3	79
REGION—1988	8.1	6	10	1.0	11

INPUT





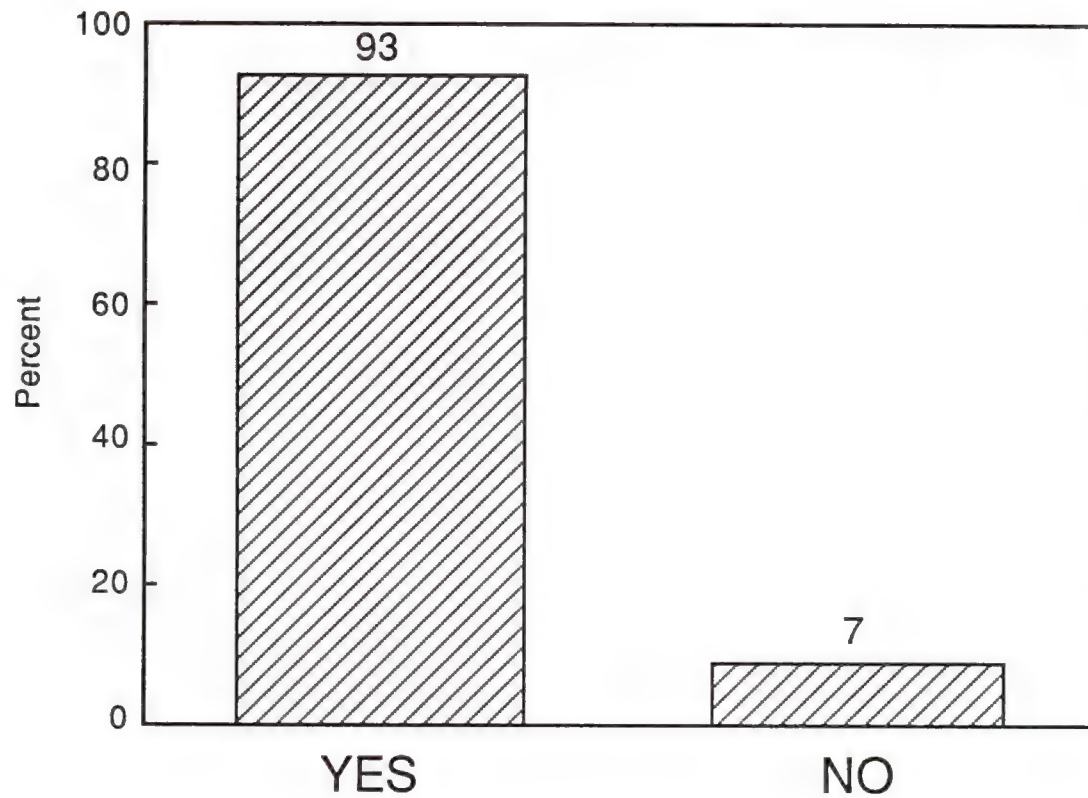
**OVERALL SATISFACTION  
IMPROVED/DECLINED/UNCHANGED  
(Southern Region)**



INPUT



**ENOUGH INTERACTION WITH CRAY  
CORPORATE MANAGEMENT (Q28G)  
(Southern Region)**



INPUT

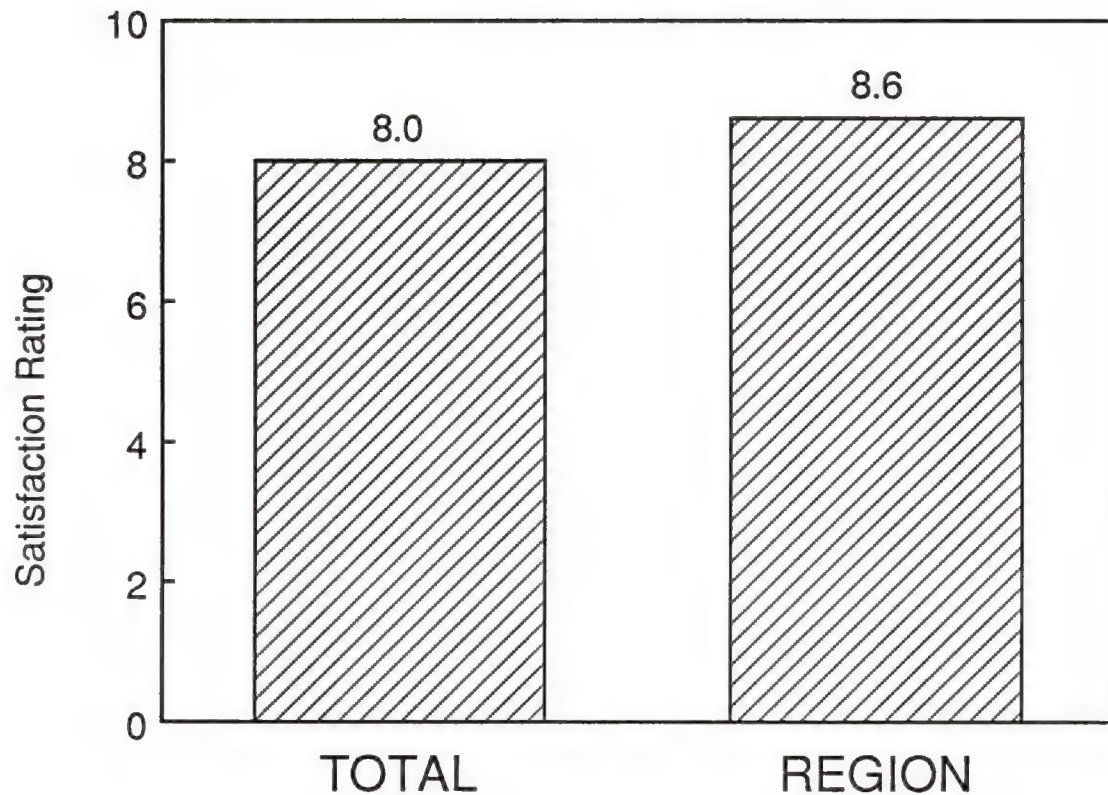


# WESTERN REGION

INPUT



## CRAY LIVING UP TO EXPECTATIONS (Western Region)



Q25: HOW WELL IS CRAY SYSTEM LIVING UP TO YOUR EXPECTATIONS?

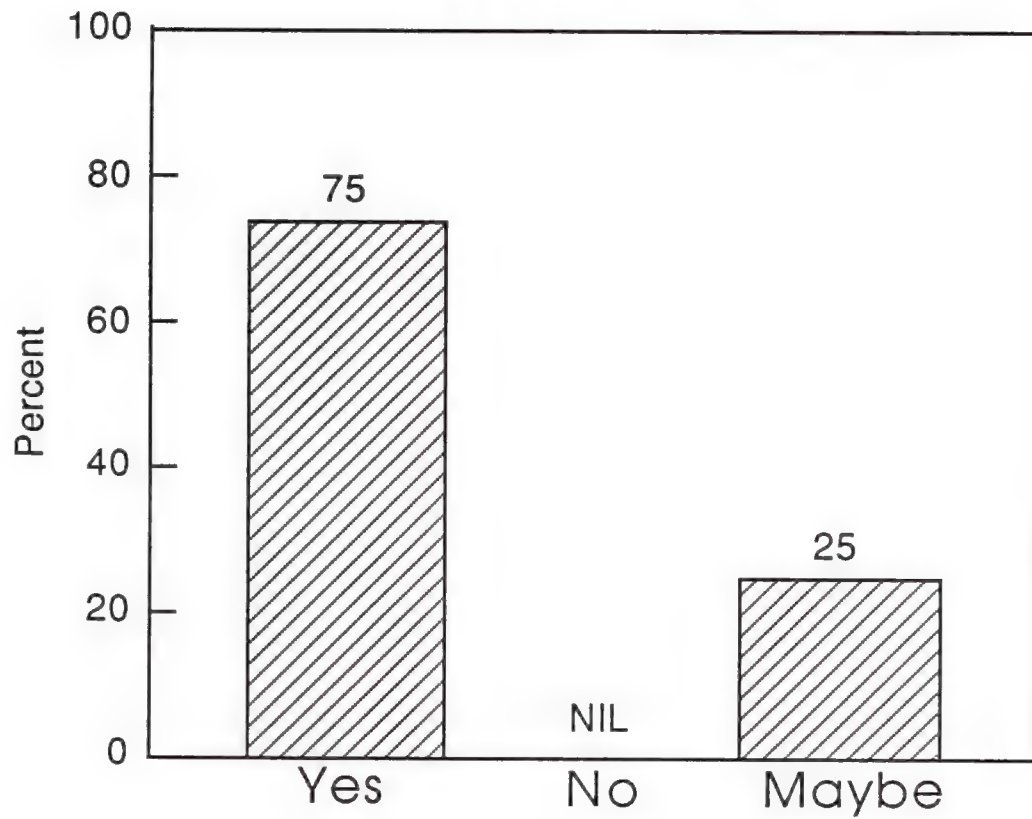
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.0	2	10	1.6	82
REGION—1988	8.6	6	10	1.0	16

INPUT





# BUY CRAY TOMORROW? (Western Region)



INPUT



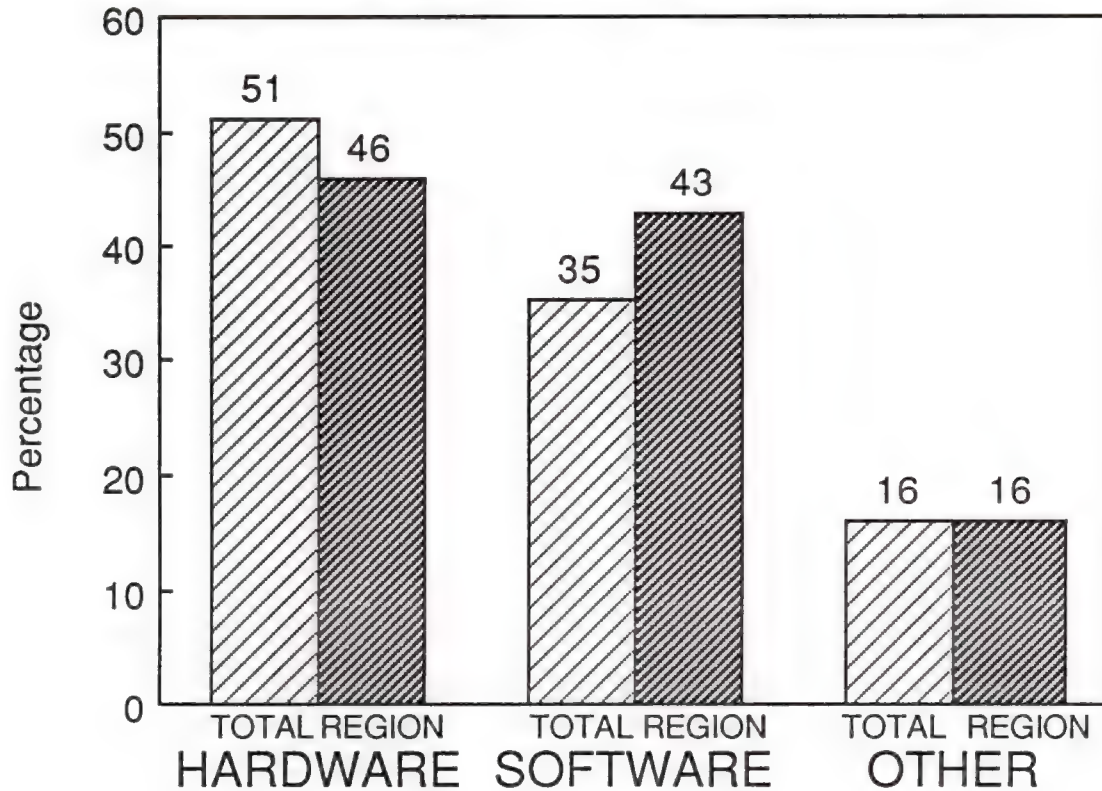
**DECISION CRITERIA IF BUY TODAY**  
**(Western Region)**

<u>Rank</u>		<u>Decision Importance</u>	<u>Cray Rate</u>
1	Overall Sys. Performance	9.3	8.3
2	Hardware Reliability	9.0	8.3
3	Price Performance	8.9	7.5
4	Sys. SW Reliability	8.6	7.8
5	Sys. SW Usability	8.2	7.7
5	Network/Connectivity	8.2	8.4
6	Sys. SW Functionality	7.9	7.5
7	Sys. SW Performance	7.8	7.5
7	Conversion Ease	7.8	8.0
8	Overall Sys. Price	7.7	6.8
9	Sys. SW Maintenance	7.0	8.1
10	Documentation	6.2	6.9
11	Application Software Avail.	6.1	6.9
12	Training	5.1	6.8

INPUT



## SYSTEM OUTAGE BY CAUSE (Western Region)



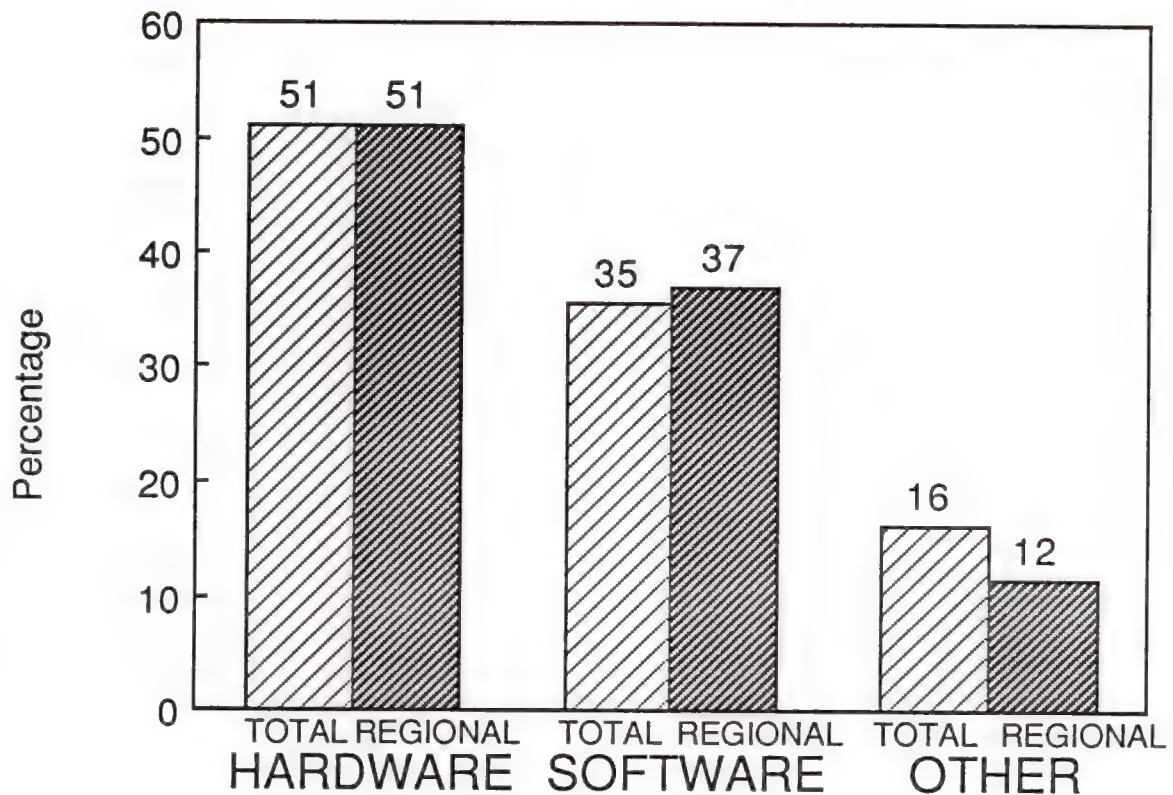
### Q7A, B, C: HARDWARE, SOFTWARE AND OTHER INTERRUPTION

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
HARDWARE					
TOTAL—1988	51	8	100	26.9	76
REGIONAL—1988	46	10	99	26.3	15
SOFTWARE					
TOTAL—1988	35	0	85	24.2	74
REGIONAL—1988	43	1	85	27.2	14
OTHER					
TOTAL—1988	16	0	72	16.7	74
REGIONAL—1988	16	9	50	16.8	13

INPUT



## SYSTEM OUTAGE BY CAUSE (Japan Region)



### Q7A, B, C: HARDWARE, SOFTWARE AND OTHER INTERRUPTION

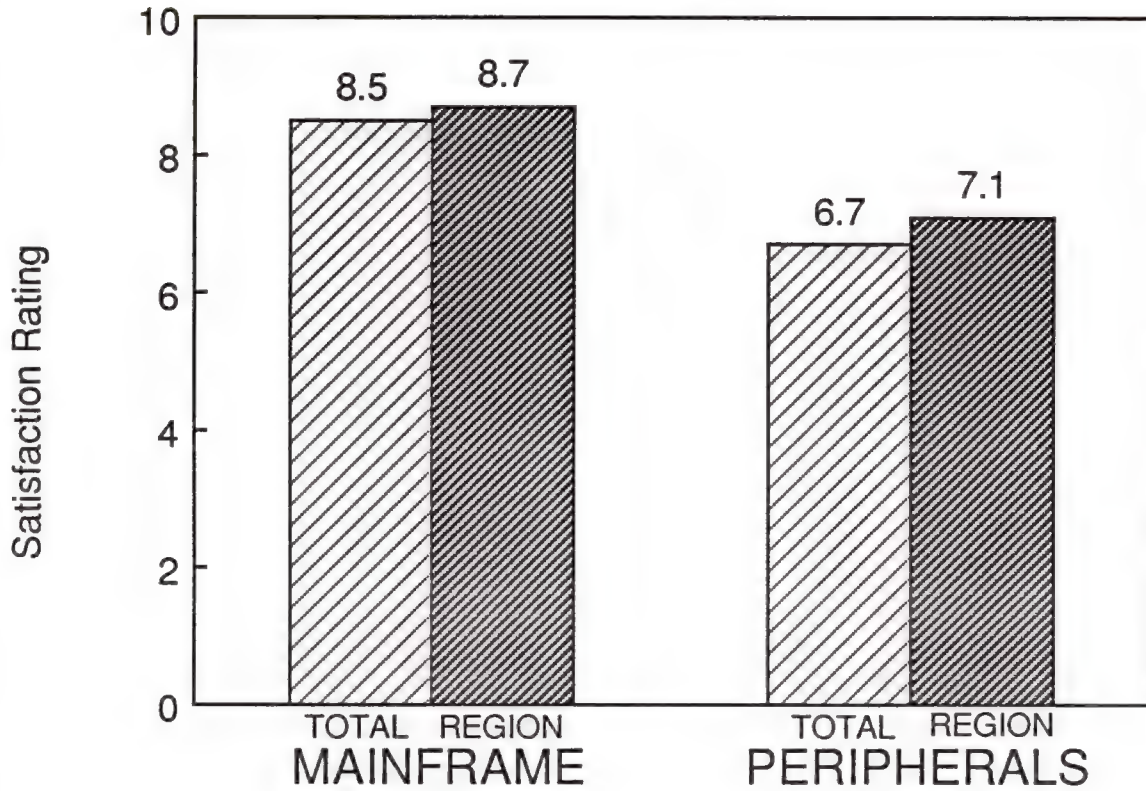
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
HARDWARE					
TOTAL—1988	51	8	100	26.9	76
REGIONAL—1988	51	10	95	29.4	8
SOFTWARE					
TOTAL—1988	35	0	85	24.2	74
REGIONAL—1988	37	5	80	27.2	8
OTHER					
TOTAL—1988	16	0	72	16.7	74
REGIONAL—1988	12	0	30	11.6	8

INPUT





## HARDWARE SATISFACTION MAINFRAME/PERIPHERALS (Western Region)



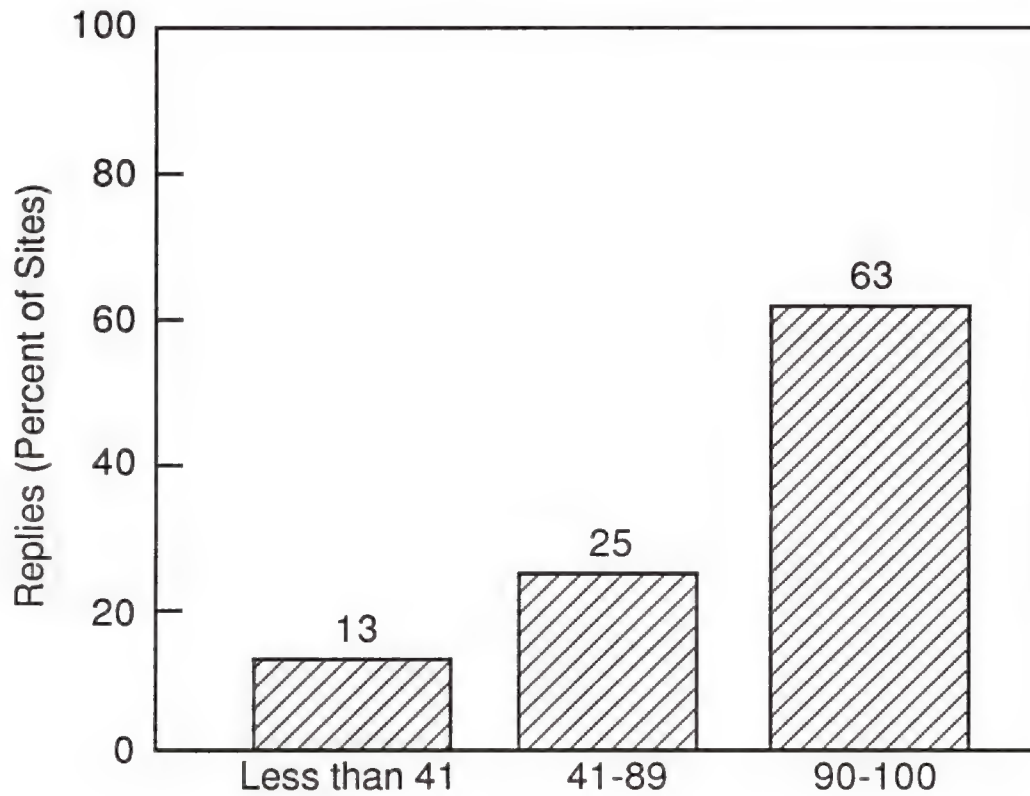
### Q10A, B: MAINFRAME/PERIPHERAL RELIABILITY

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
MAINFRAME					
TOTAL—1988	8.5	2	10	1.4	83
REGIONAL—1988	8.7	7	10	1.0	15
PERIPHERALS					
TOTAL—1988	6.7	1	10	2.3	83
REGIONAL—1988	7.1	4	10	1.8	15

INPUT



## UTILIZATION PROFILE (Western Region)

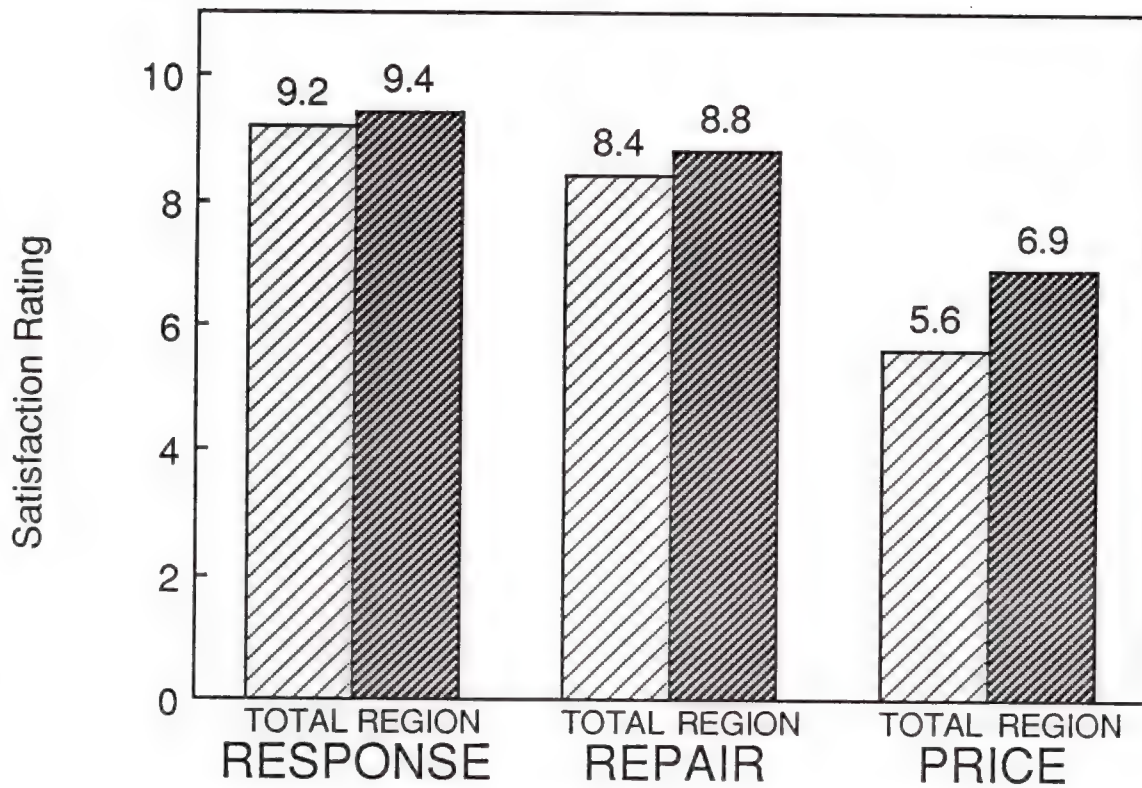


Q6: Average Monthly Utilization for Past 6 Months

INPUT



## MAINTENANCE RESPONSE SATISFACTION (Western Region)



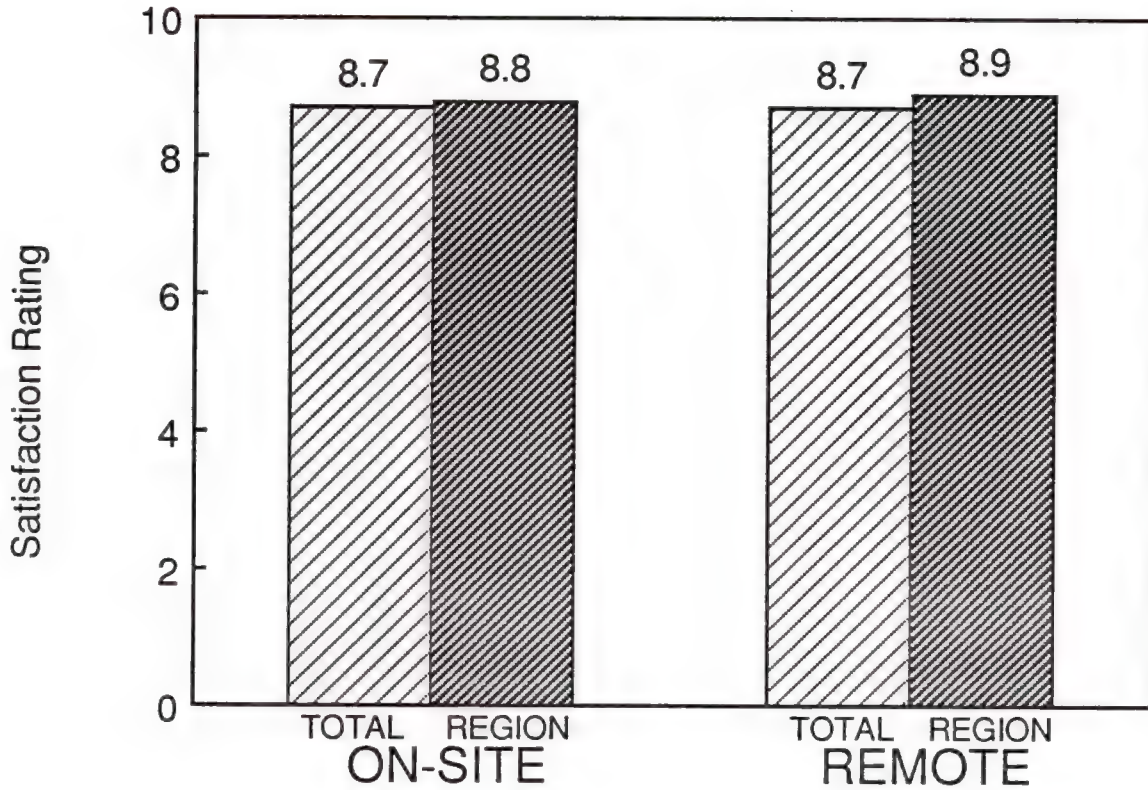
Q10C. D. E: HARDWARE MAINTENANCE, RESPONSE, REPAIR TIME AND PRICE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RESPONSE					
TOTAL—1988	9.2	6	10	0.9	83
REGIONAL—1988	9.4	8	10	0.6	15
REPAIR					
TOTAL—1988	8.4	3	10	1.6	82
REGIONAL—1988	8.8	7	10	0.9	15
PRICE					
TOTAL—1988	5.6	1	10	2.5	74
REGIONAL—1988	6.9	2	9	1.8	14

INPUT



## ENGINEER SKILL LEVEL (Western Region)



### Q12E.F: CUSTOMER ENGINEER SKILL LEVEL RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
ON-SITE					
TOTAL—1988	8.7	6	10	1.2	88
REGIONAL—1988	8.8	7	10	0.9	15
REMOTE					
TOTAL—1988	8.7	5	10	1.4	75
REGIONAL—1988	8.9	6	10	1.1	15

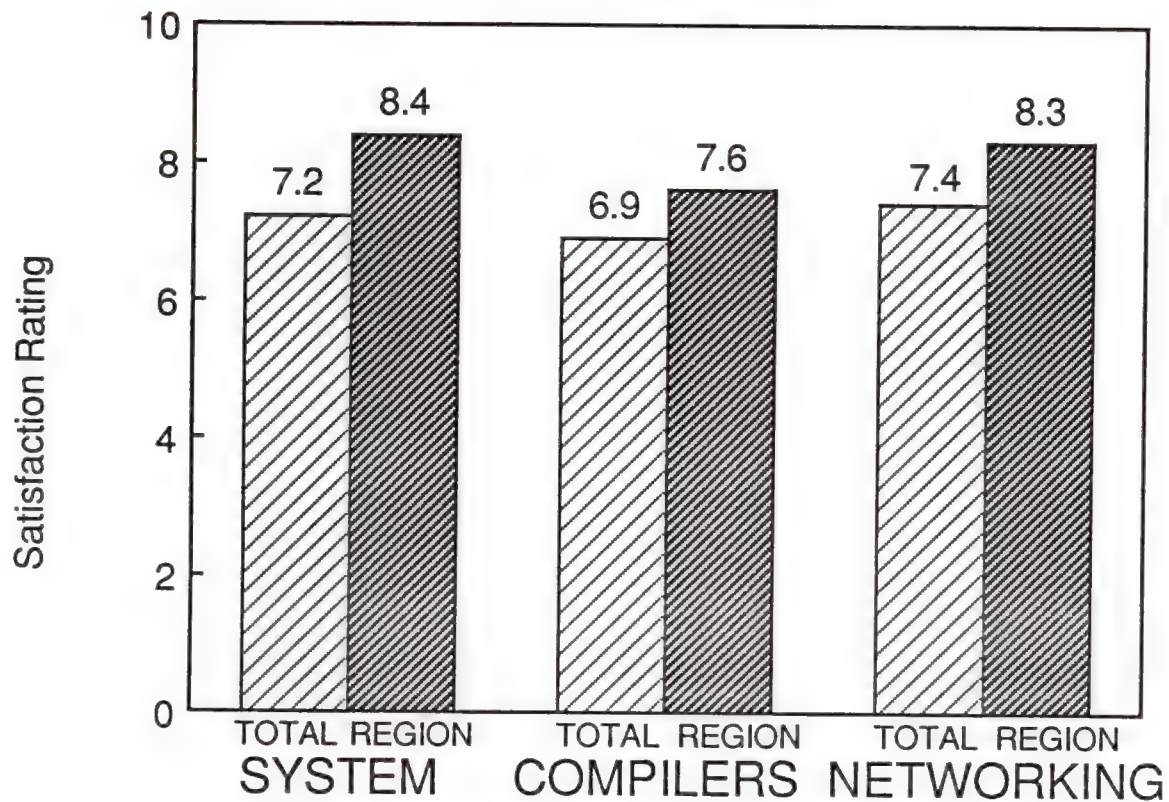
INPUT







## SOFTWARE RELIABILITY (Western Region)



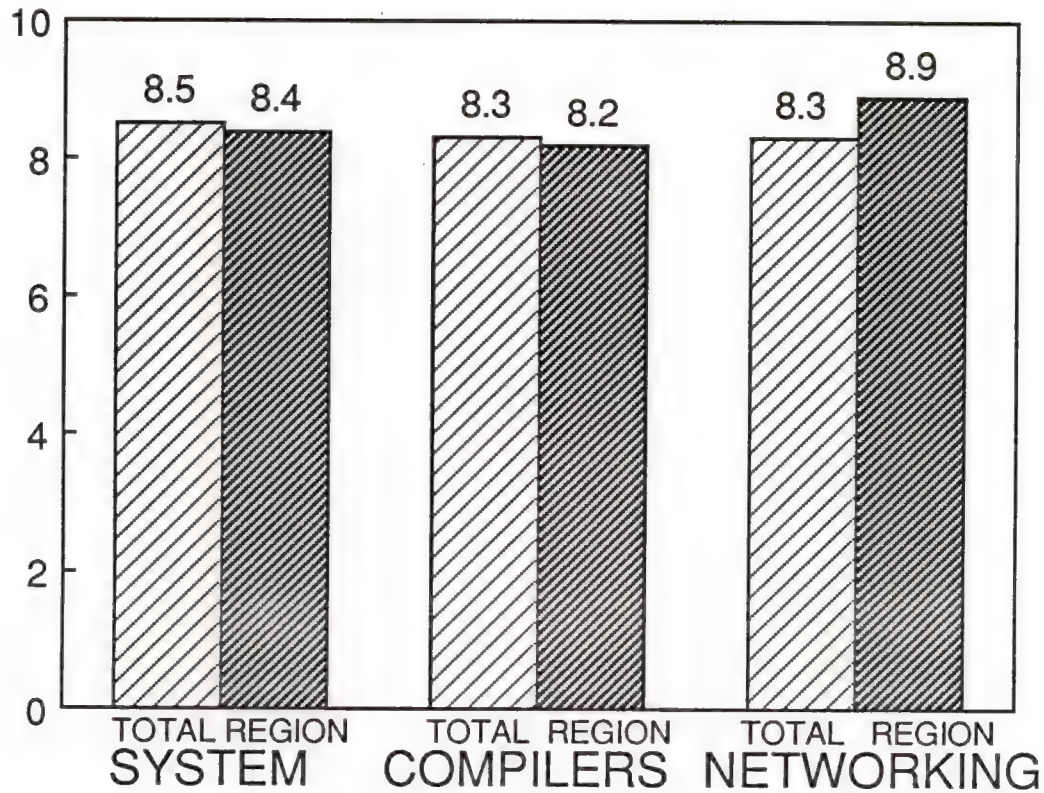
### Q13A. B. D: SYSTEM SOFTWARE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	7.2	1	10	1.9	78
REGIONAL—1988	8.4	7	10	0.8	14
COMPILERS (Fortran)					
TOTAL—1988	6.9	3	10	1.7	80
REGIONAL—1988	7.6	5	9	1.3	15
NETWORKING					
TOTAL—1988	7.4	3	10	2.0	26
REGIONAL—1988	8.3	6	10	1.4	7

INPUT



# SOFTWARE SUPPORT RATINGS LOCAL SITE SUPPORT (Western Region)



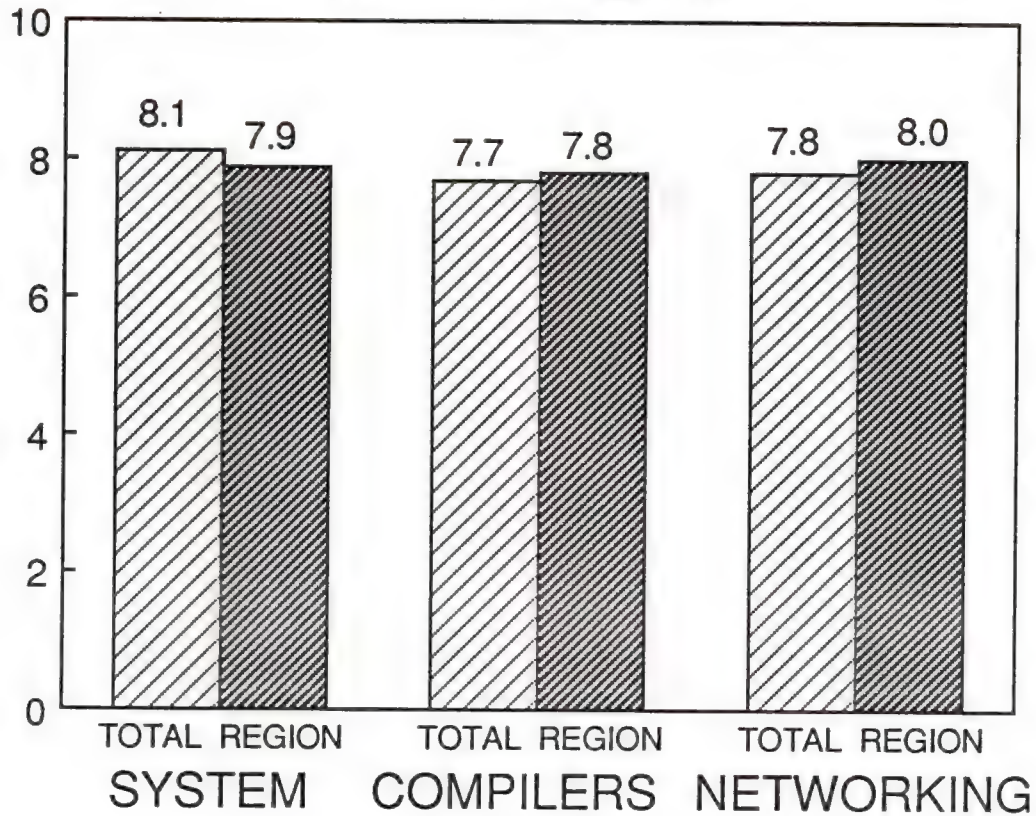
Q18A, B, D: SOFTWARE SUPPORT RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	8.5	3	10	1.7	75
REGIONAL—1988	8.4	5	10	1.9	14
COMPILERS (Fortran)					
TOTAL—1988	8.3	3	10	1.8	72
REGIONAL—1988	8.2	3	10	2.2	13
NETWORKING					
TOTAL—1988	8.3	3	10	1.9	35
REGIONAL—1988	8.9	7	10	1.4	8

INPUT



# SOFTWARE SUPPORT RATING FIELD SUPPORT (Western Region)



## Q18A,B,D: SOFTWARE SUPPORT RATING

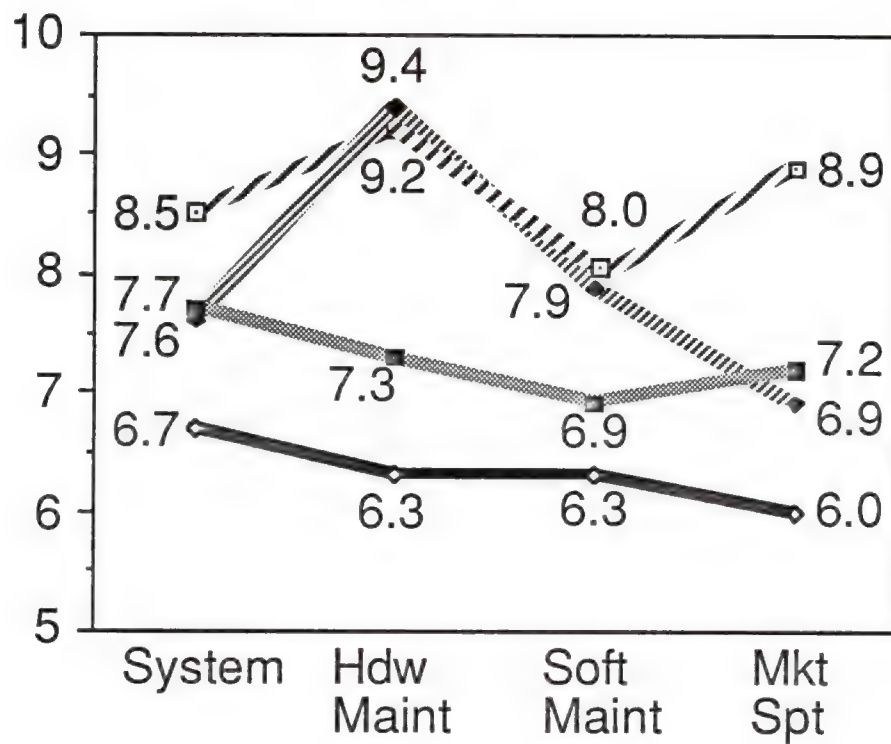
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SOFTWARE					
TOTAL—1988	8.1	4	10	1.4	47
REGIONAL—1988	7.9	4	9	1.9	8
COMPILERS (FORTRAN)					
TOTAL—1988	7.7	3	10	1.6	46
REGIONAL—1988	7.8	4	9	2.0	6
NETWORKING					
TOTAL—1988	7.8	4	10	1.5	24
REGIONAL—1988	8.0	4	10	2.2	6

INPUT





## VENDOR COMPARISONS (Western Region)



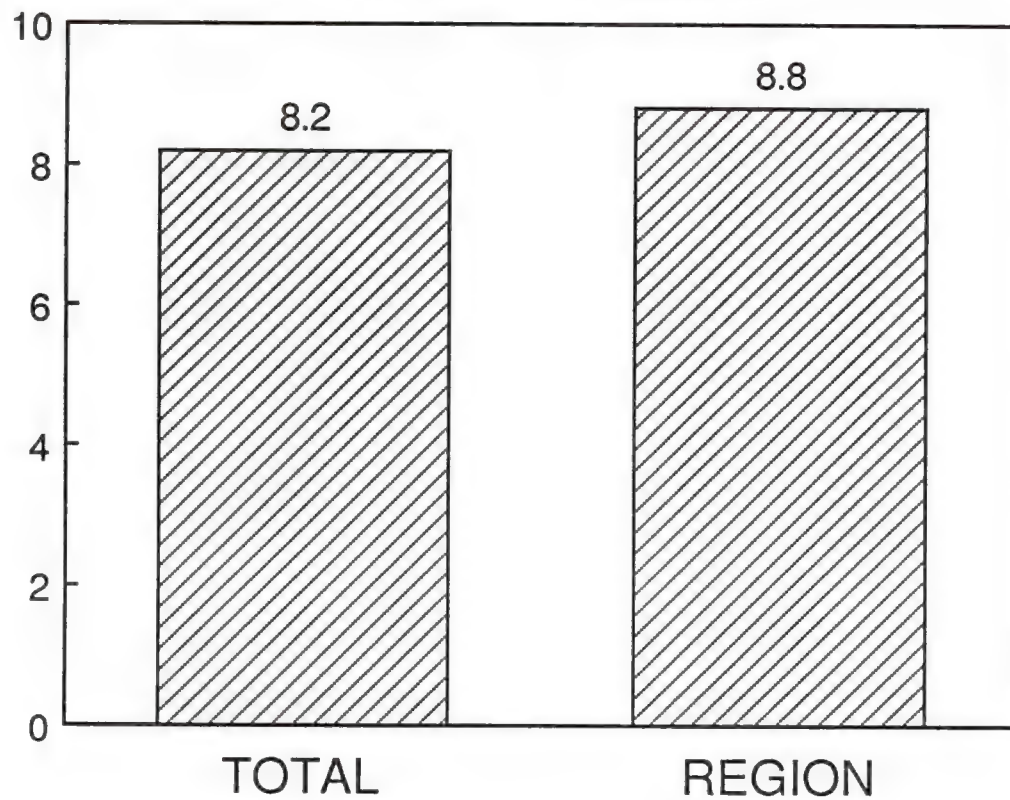
\\\ Cray  
 /// IBM  
 --- DEC  
 — CDC

INPUT





# MARKETING REPRESENTATIVE HELPFULNESS (Western Region)



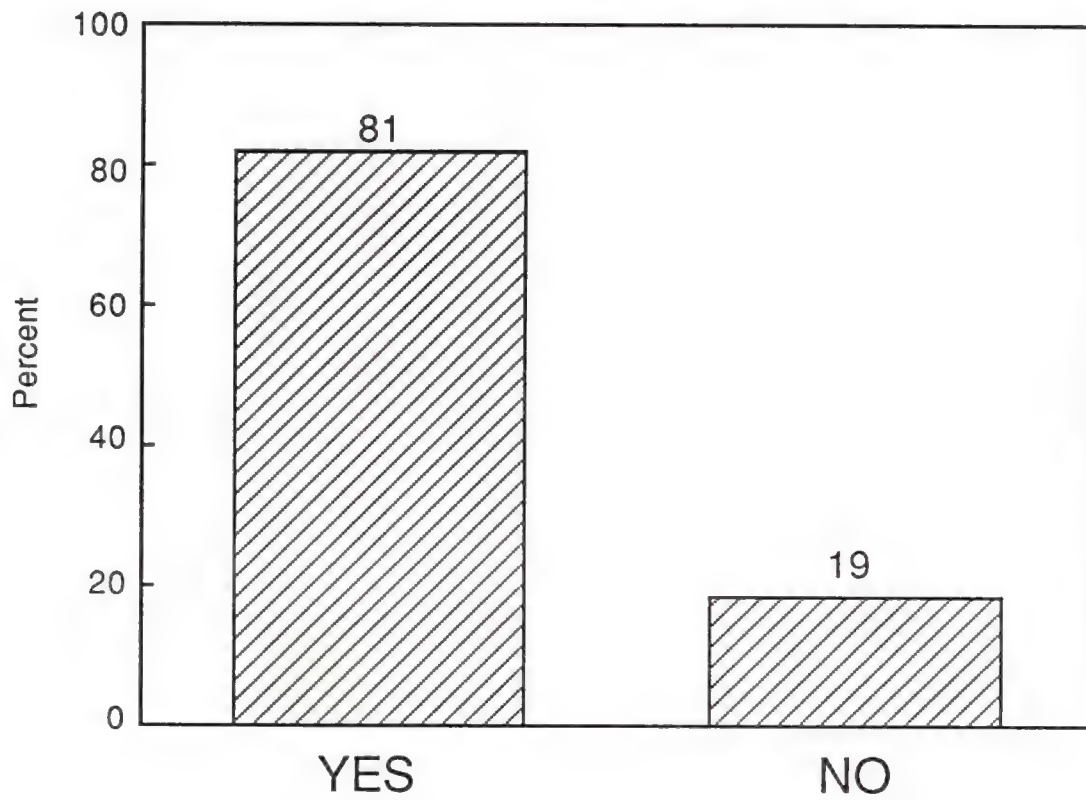
## Q28D: HELPFULNESS OF CRAY LOCAL MARKETING REPRESENTATIVE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.2	3	10	1.7	80
REGION—1988	8.8	3	10	1.8	16

INPUT

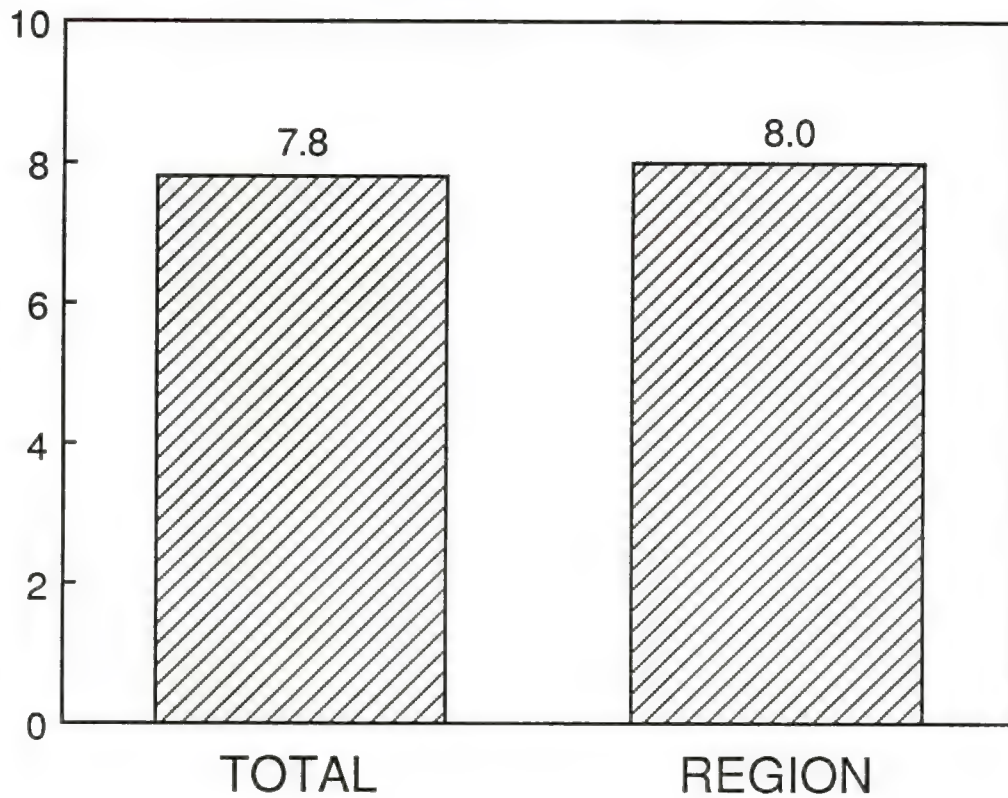


**KEPT AWARE ENOUGH OF CRAY'S  
HARDWARE/SOFTWARE DIRECTIONS (Q29)  
(Western Region)**





## USER SATISFACTION WITH SYSTEM (Western Region)



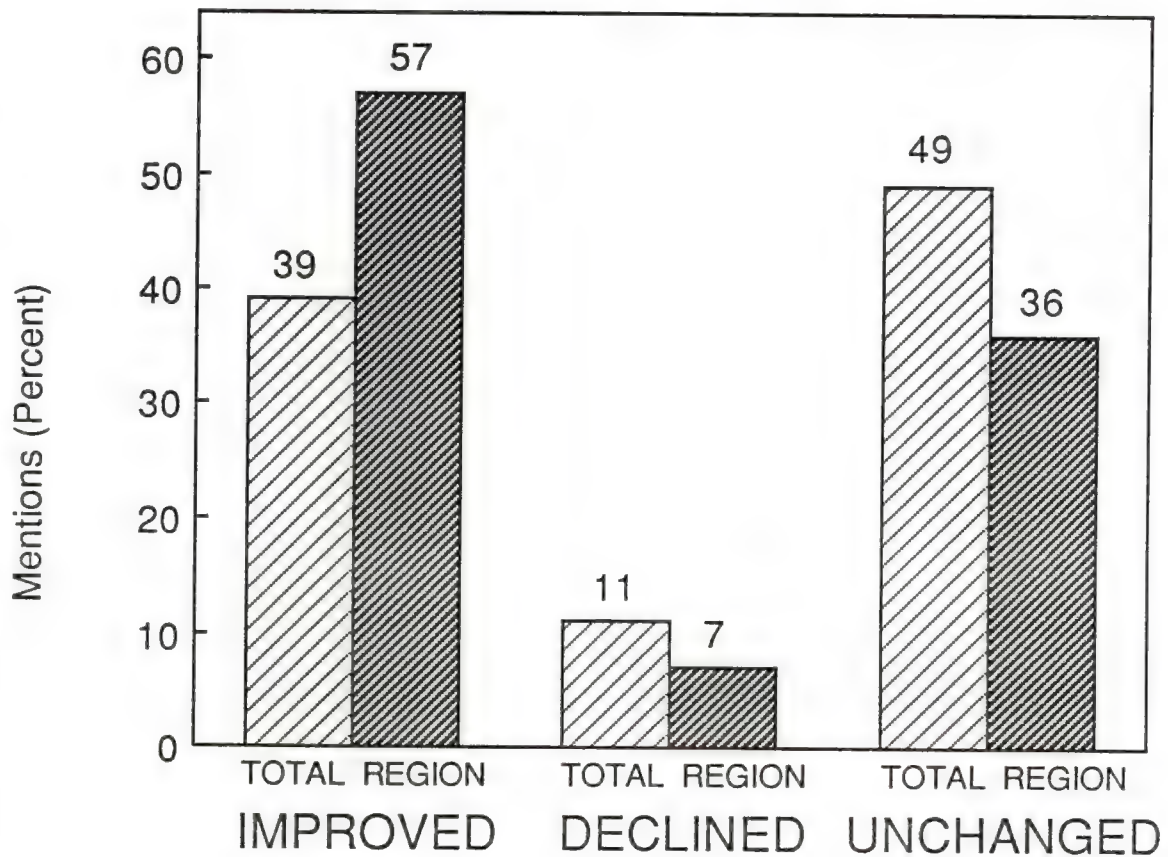
Q32B: HOW DO USERS RATE SATISFACTION WITH SYSTEM?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	7.8	3	10	1.3	79
REGION—1988	8.0	6	9	0.8	15

INPUT



**OVERALL SATISFACTION  
IMPROVED/DECLINED/UNCHANGED  
(Western Region)**

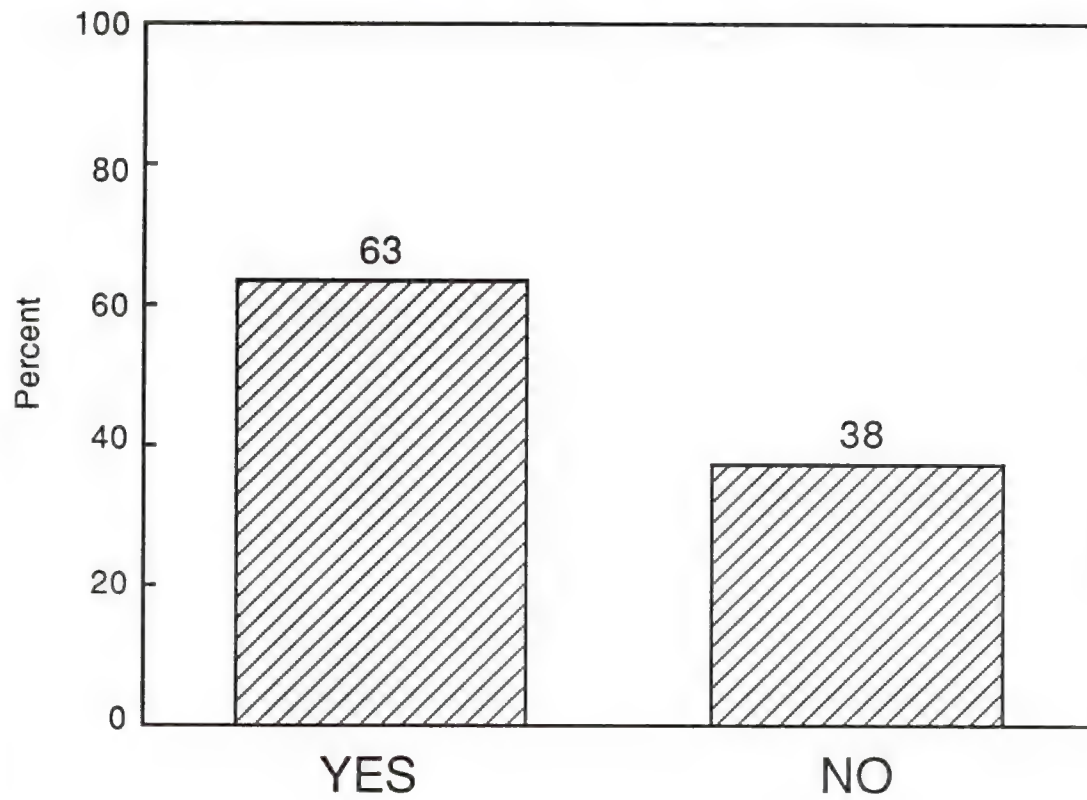


INPUT





**ENOUGH INTERACTION WITH CRAY  
CORPORATE MANAGEMENT (Q28G)  
(Western Region)**



INPUT

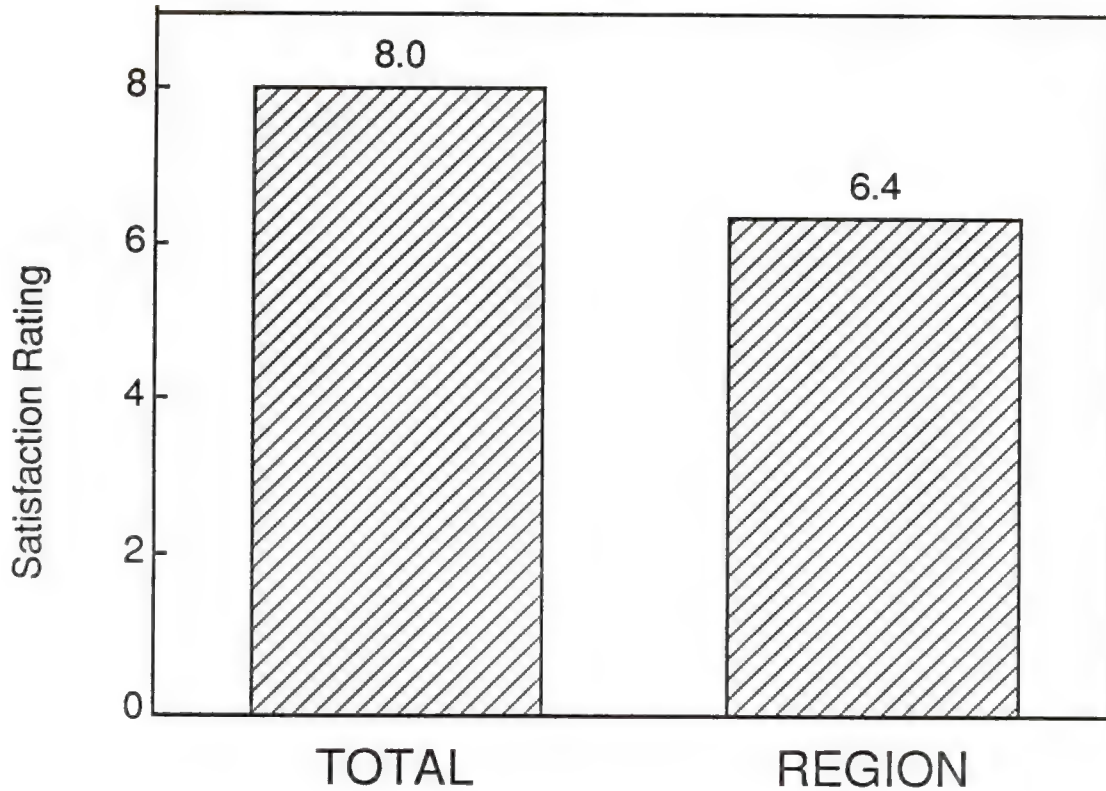


# JAPAN REGION

INPUT



## CRAY LIVING UP TO EXPECTATIONS (Japan Region)



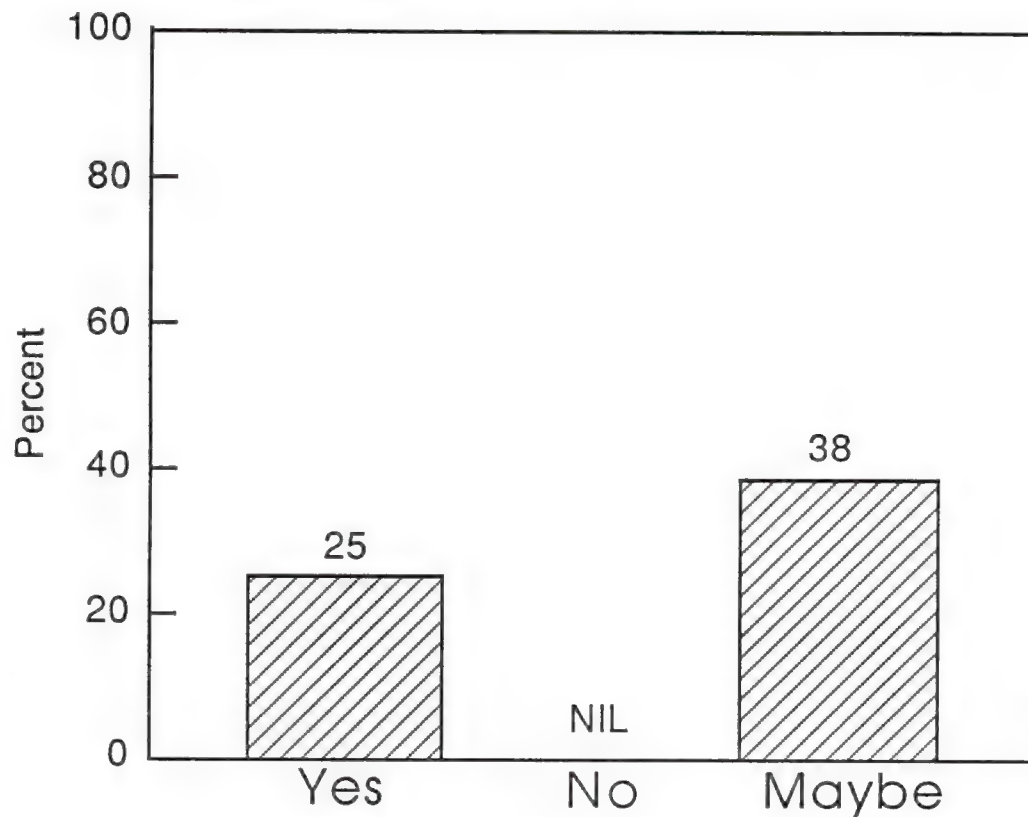
Q25: HOW WELL IS CRAY SYSTEM LIVING UP TO YOUR EXPECTATIONS?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.0	2	10	1.5	83
REGION—1988	6.4	3	8	1.7	9

INPUT



## BUY CRAY TOMORROW? (Japan Region)\*



\* 38% of respondents indicated "other." Comments indicate that the response refers to a lower level of possibility than "maybe," but not a "no."

INPUT





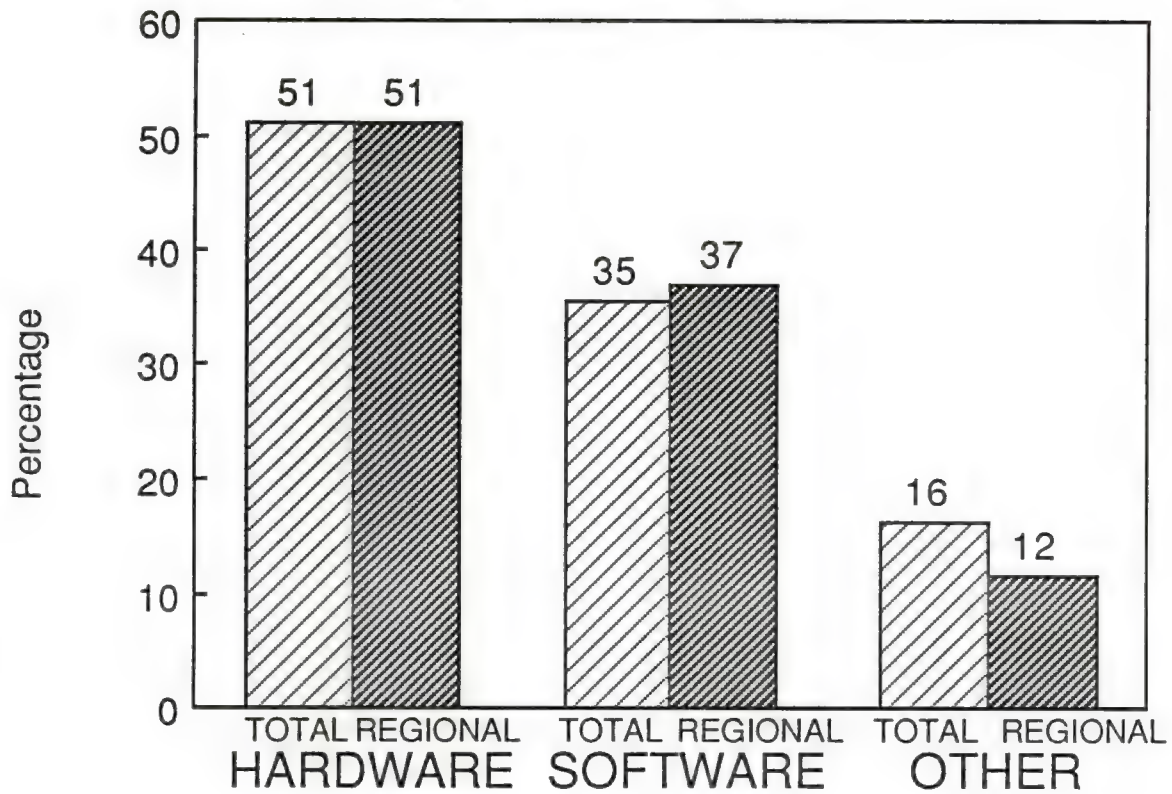
# **DECISION CRITERIA IF BUY TODAY** **(Japan Region)**

<u>Rank</u>		<u>Decision Importance</u>	<u>Cray Rate</u>
1	Overall Sys. Performance	9.6	6.4
2	Application Software Avail.	9.4	7.4
3	Networking/Connectivity	9.3	6.6
4	Hardware Reliability	8.9	6.3
5	Price Performance	8.6	5.7
6	Sys. SW Maint.	8.0	6.0
7	Overall Sys. Price	7.8	5.9
7	Sys. SW Reliability	7.8	5.7
7	Sys. SW Usability	7.8	6.3
8	Sys. SW Functionality	7.6	6.0
8	Conversion Ease	7.6	5.7
9	Sys. SW Performance	7.5	6.0
10	Training	7.0	4.9
11	Documentation	6.0	4.6

INPUT



## SYSTEM OUTAGE BY CAUSE (Japan Region)



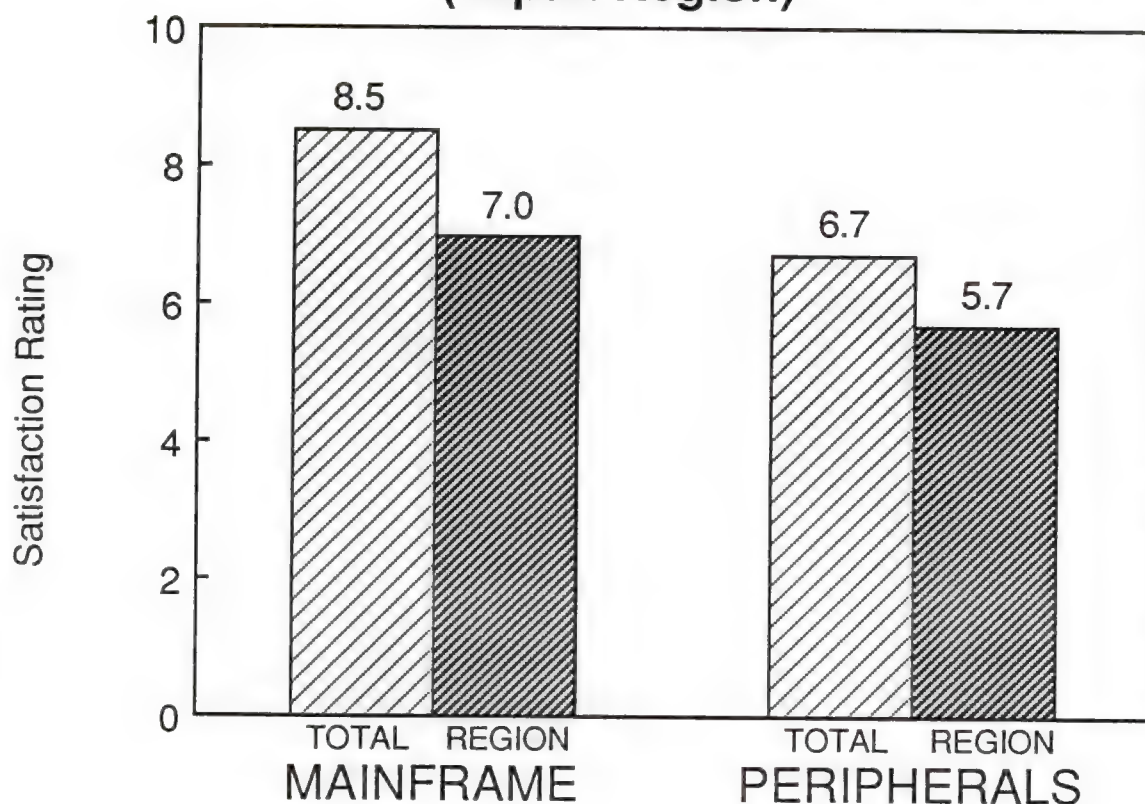
### Q7A, B, C: HARDWARE, SOFTWARE AND OTHER INTERRUPTION

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
HARDWARE					
TOTAL—1988	51	8	100	26.9	76
REGIONAL—1988	51	10	95	29.4	8
SOFTWARE					
TOTAL—1988	35	0	85	24.2	74
REGIONAL—1988	37	5	80	27.2	8
OTHER					
TOTAL—1988	16	0	72	16.7	74
REGIONAL—1988	12	0	30	11.6	8

INPUT



# **HARDWARE SATISFACTION MAINFRAME/PERIPHERALS (Japan Region)**



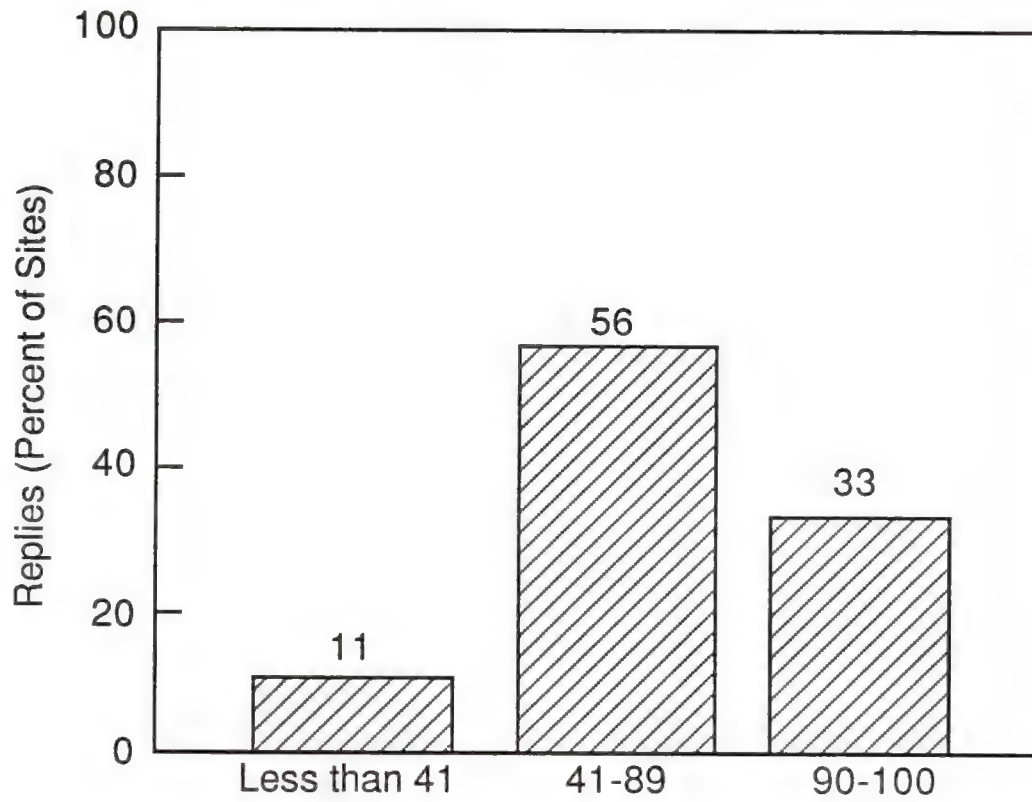
## Q10A, B: MAINFRAME/PERIPHERAL RELIABILITY

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
MAINFRAME					
TOTAL—1988	8.5	2	10	1.4	83
REGIONAL—1988	7.0	5	8	1.1	9
PERIPHERALS					
TOTAL—1988	6.7	1	10	2.3	83
REGIONAL—1988	5.7	3	8	1.7	9

INPUT



## UTILIZATION PROFILE (Japan Region)



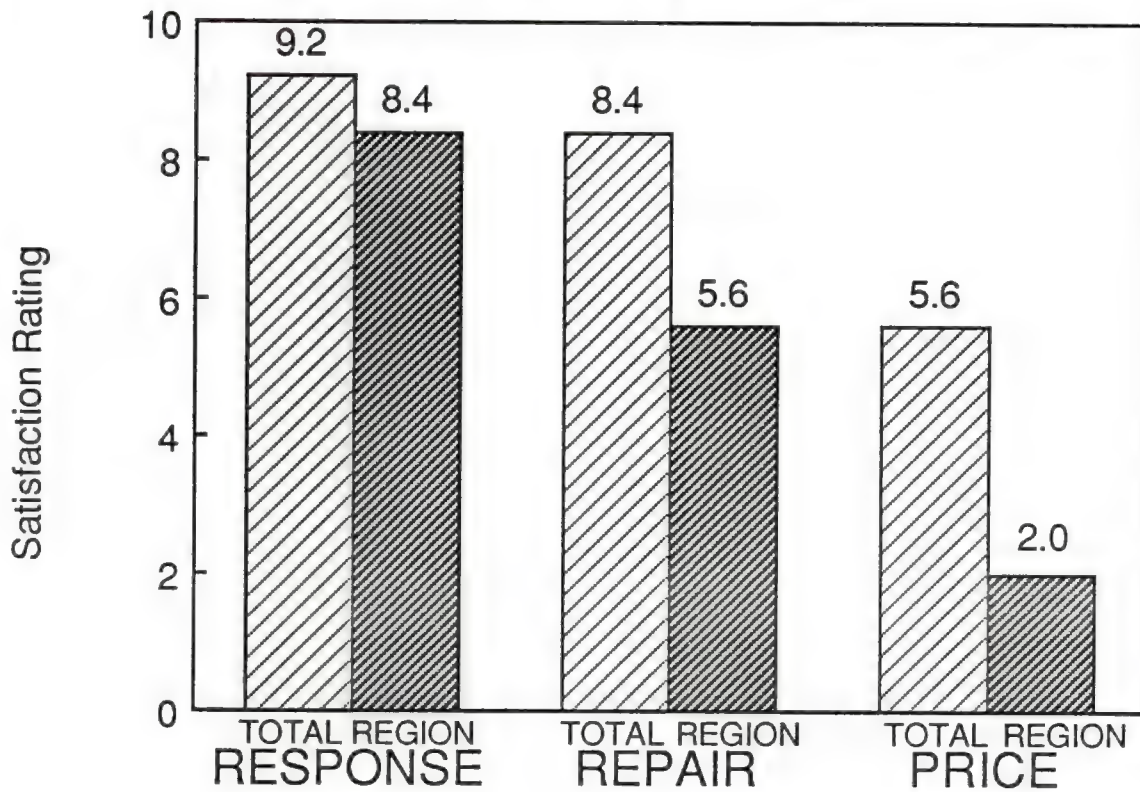
Q6: Average Monthly Utilization For Past 6 Months

INPUT





## MAINTENANCE RESPONSE SATISFACTION (Japan Region)



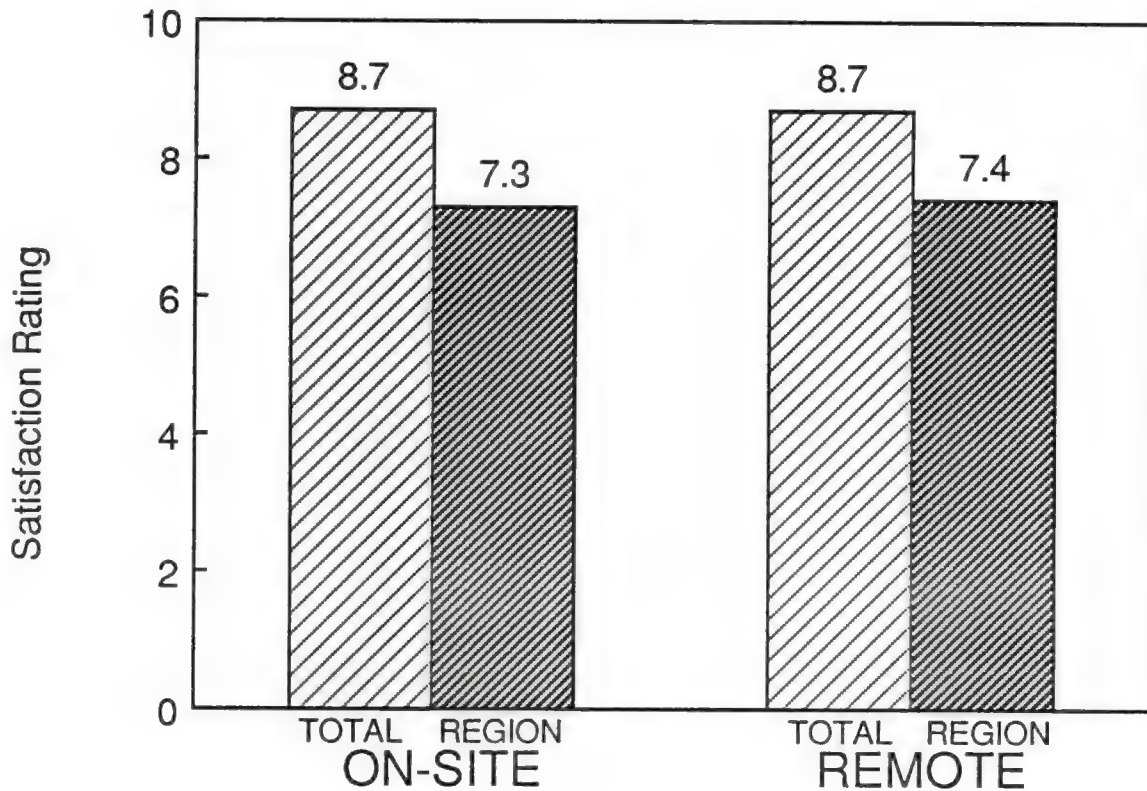
Q10C, D, E: HARDWARE MAINTENANCE, RESPONSE, REPAIR TIME AND PRICE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RESPONSE					
TOTAL—1988	9.2	6	10	0.9	83
REGIONAL—1988	8.4	6	10	1.7	9
REPAIR					
TOTAL—1988	8.4	3	10	1.6	82
REGIONAL—1988	5.6	3	8	1.5	8
PRICE					
TOTAL—1988	5.6	1	10	2.5	74
REGIONAL—1988	2.0	1	3	0.9	8

INPUT



## ENGINEER SKILL LEVEL (Japan Region)



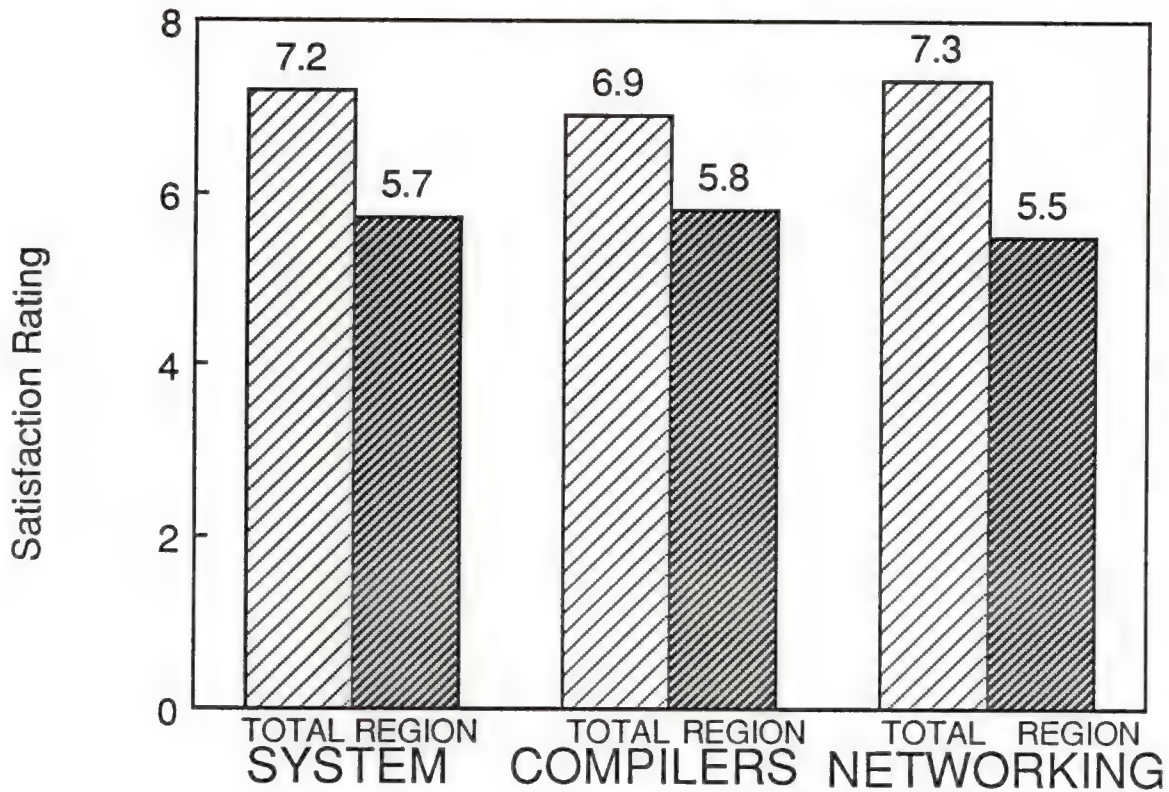
### Q12E.F: CUSTOMER ENGINEER SKILL LEVEL RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
ON-SITE					
TOTAL—1988	8.7	6	10	1.2	88
REGIONAL—1988	7.3	6	8	1.0	9
REMOTE					
TOTAL—1988	8.7	5	10	1.4	75
REGIONAL—1988	7.4	5	8	1.1	9

INPUT



## SOFTWARE RELIABILITY (Japan Region)



### Q13A, B, D: SYSTEM SOFTWARE

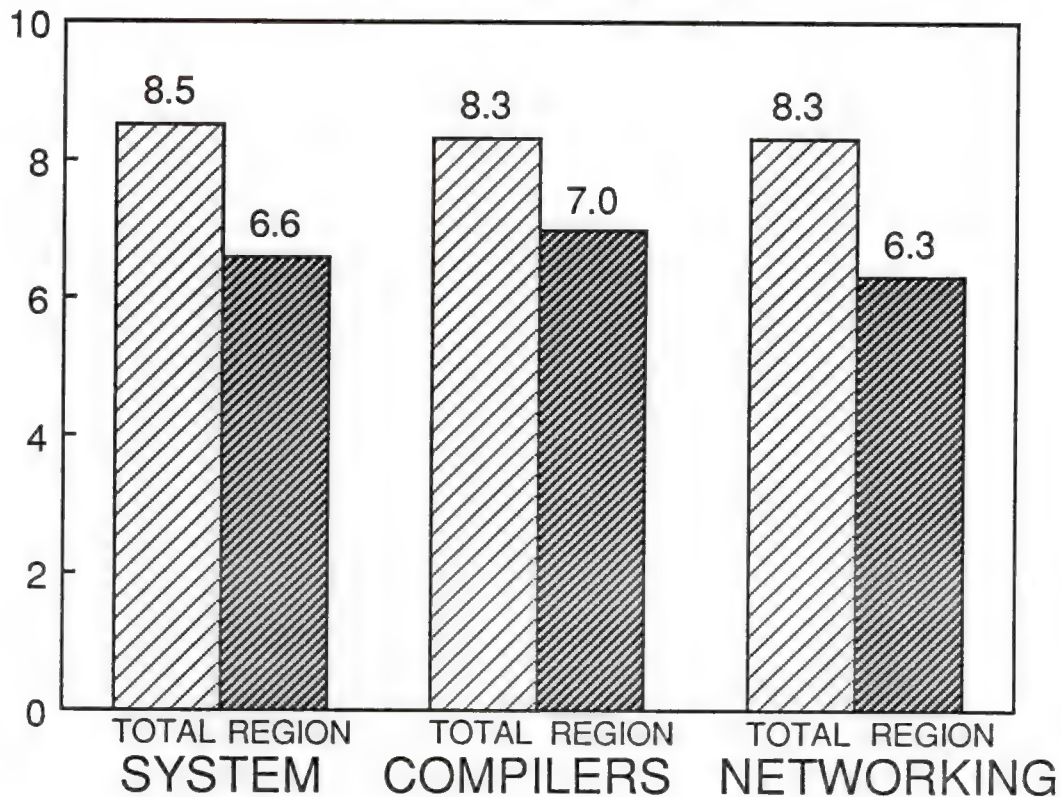
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	7.2	1	10	2.0	78
REGIONAL—1988	5.7	3	8	1.6	9
COMPILERS (Fortran)					
TOTAL—1988	6.9	3	10	1.7	81
REGIONAL—1988	5.8	3	8	1.6	9
NETWORKING					
TOTAL—1988	7.3	3	10	2.0	26
REGIONAL—1988	5.5	3	8	3.5	2

INPUT





# SOFTWARE SUPPORT RATINGS LOCAL SITE SUPPORT (Japan Region)



Q18A. B. D: SOFTWARE SUPPORT RATINGS

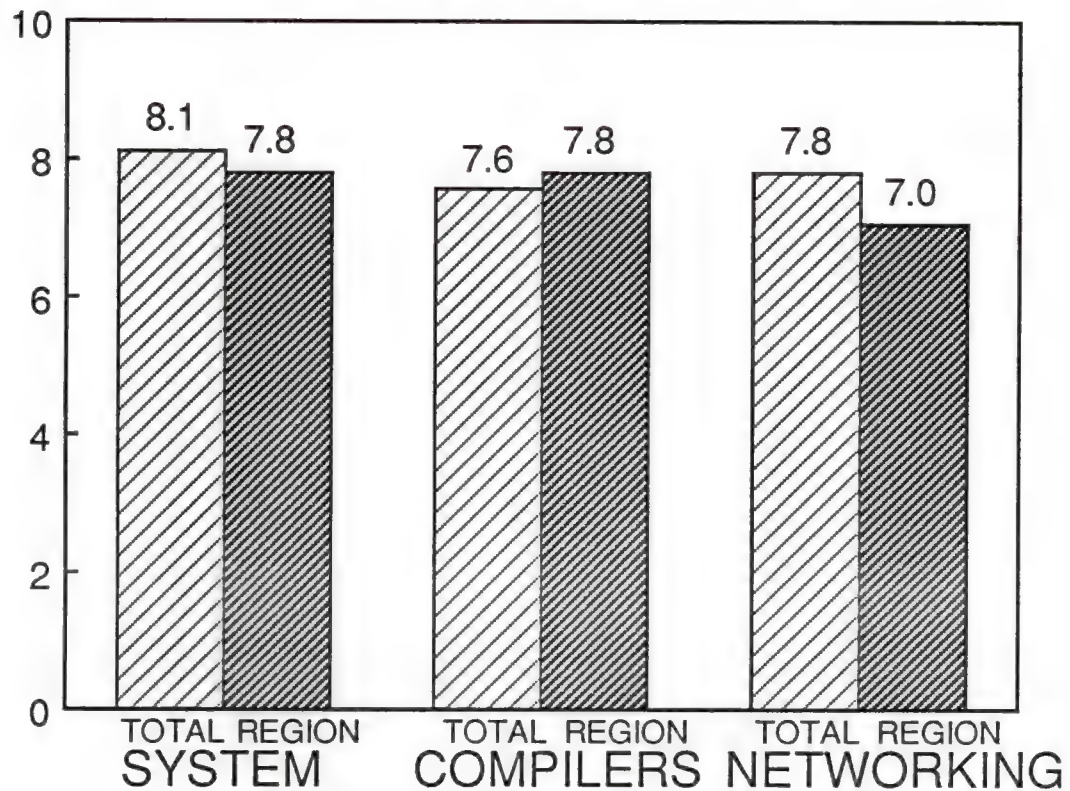
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	8.5	3	10	1.7	75
REGIONAL—1988	6.6	4	10	2.1	7
COMPILERS (Fortran)					
TOTAL—1988	8.3	3	10	1.8	72
REGIONAL—1988	7.0	4	10	1.9	7
NETWORKING					
TOTAL—1988	8.3	3	10	1.9	35
REGIONAL—1988	6.3	5	8	1.3	4

INPUT





# SOFTWARE SUPPORT RATING FIELD SUPPORT (Japan Region)



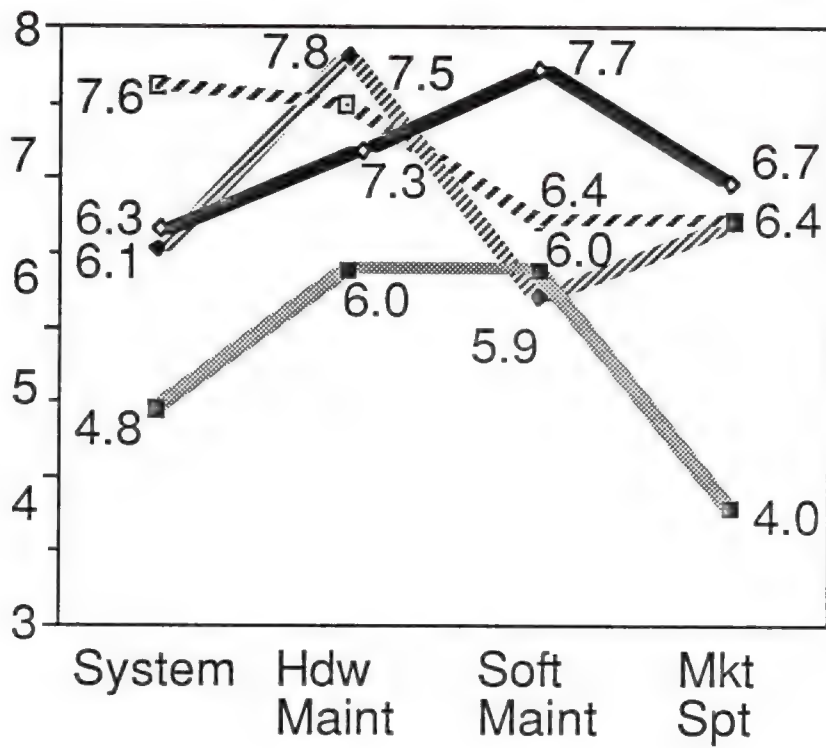
## Q18A. B. D: SOFTWARE SUPPORT RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	8.1	4	10	1.4	47
REGIONAL—1988	7.8	7	10	1.0	8
COMPILERS (Fortran)					
TOTAL—1988	7.6	3	10	1.6	45
REGIONAL—1988	7.8	6	10	1.2	8
NETWORKING					
TOTAL—1988	7.8	4	10	1.5	24
REGIONAL—1988	7.0	7	7	0.0	3

INPUT



## VENDOR COMPARISONS (Japan Region)

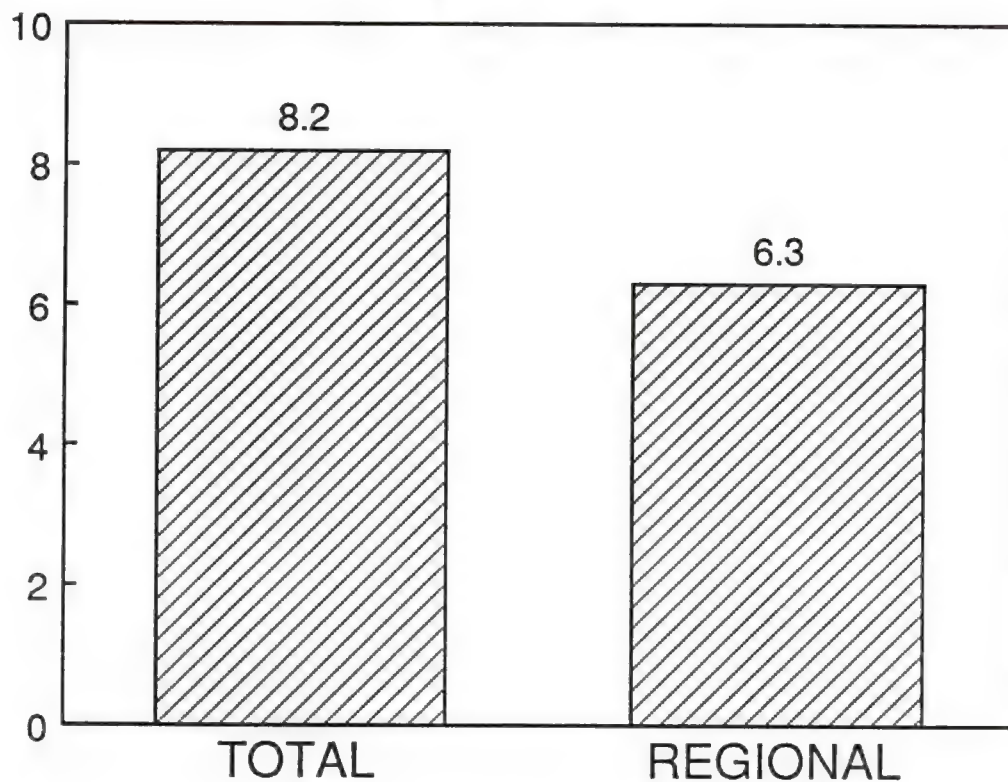


- - - - - Cray  
 / / / / / IBM  
 x x x x x DEC  
 ———— CDC

INPUT



# MARKETING REPRESENTATIVE HELPFULNESS (Japan Region)



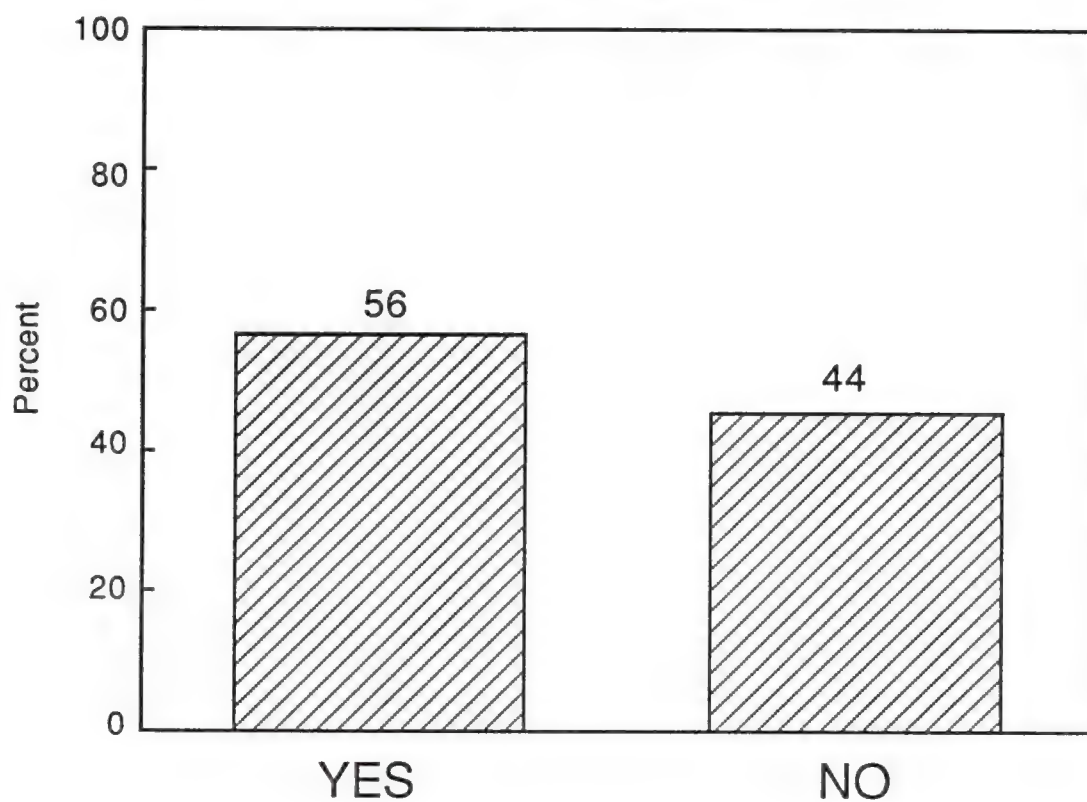
## Q28D: HELPFULNESS OF CRAY LOCAL MARKETING REPRESENTATIVE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.2	3	10	1.7	80
REGION—1988	6.3	4	8	1.4	9

INPUT



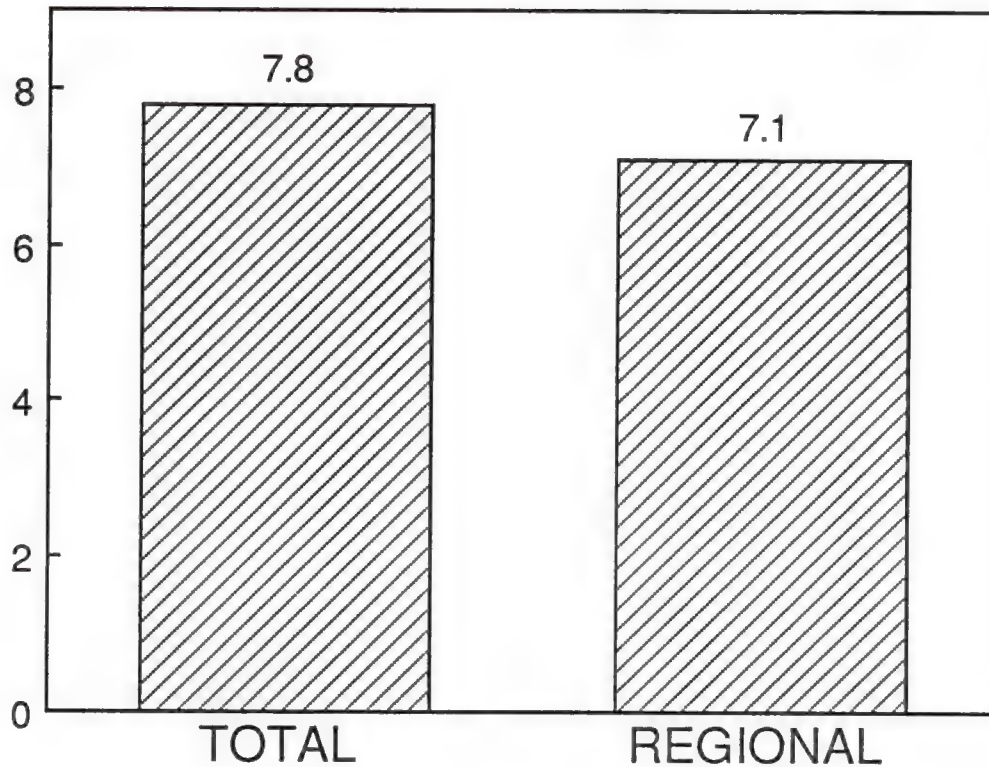
**KEPT AWARE ENOUGH OF CRAY'S  
HARDWARE/SOFTWARE DIRECTIONS (Q29)  
(Japan Region)**







## USER SATISFACTION WITH SYSTEM (Japan Region)



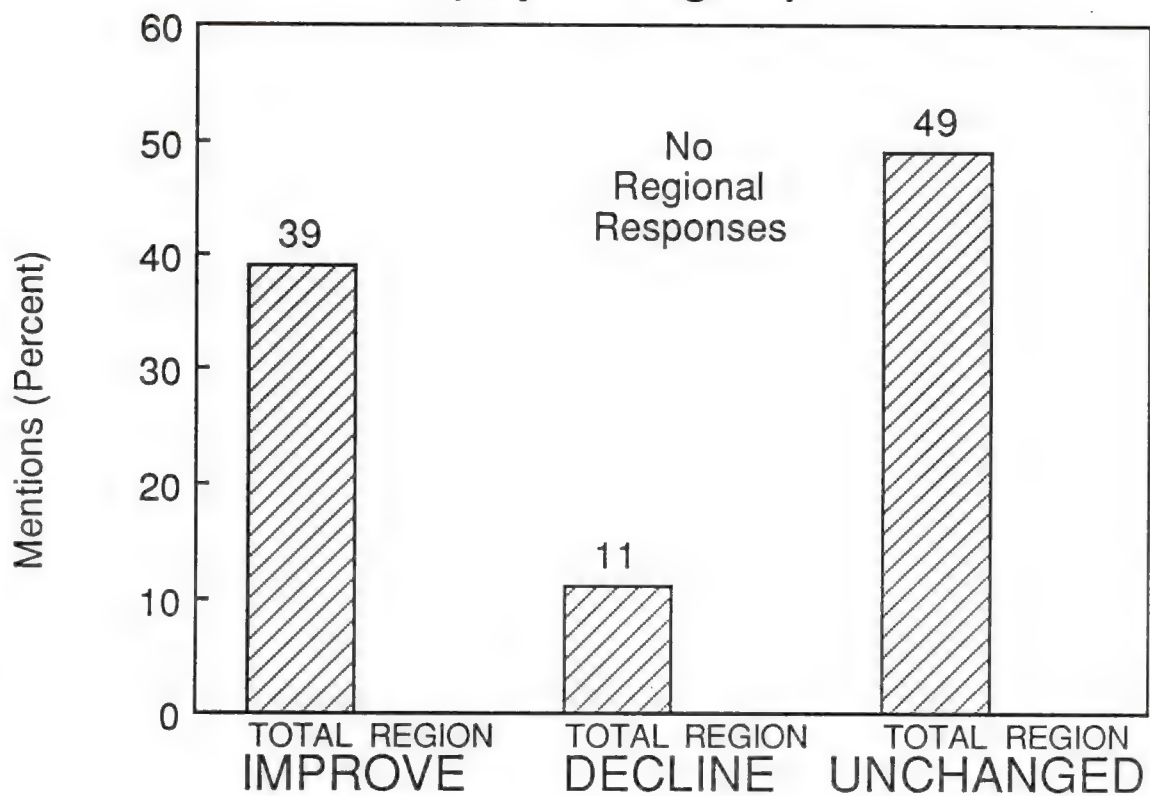
Q32B: HOW DO USERS RATE SATISFACTION WITH SYSTEM?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	7.8	3	10	1.3	79
REGION—1988	7.1	3	8	1.8	8

INPUT



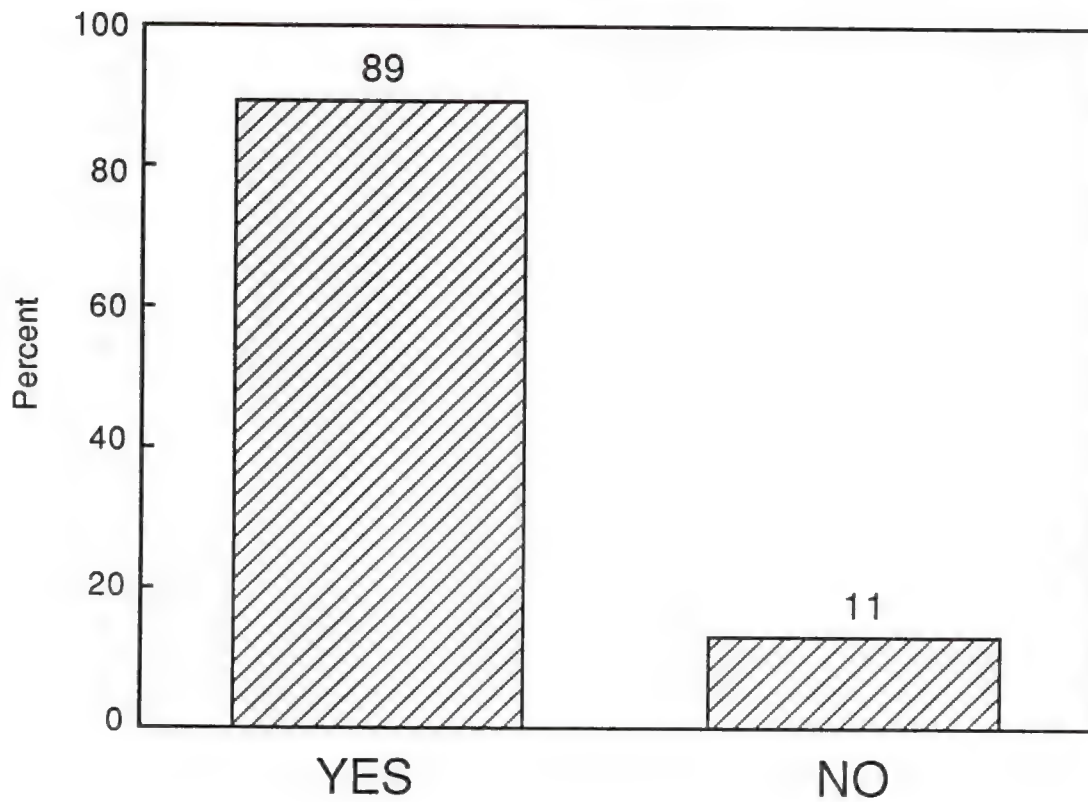
# HAS OVERALL SATISFACTION IMPROVED/DECLINED/UNCHANGED (Japan Region)



INPUT



**ENOUGH INTERACTION WITH CRAY  
CORPORATE MANAGEMENT (Q28G)  
(Japan Region)**



INPUT



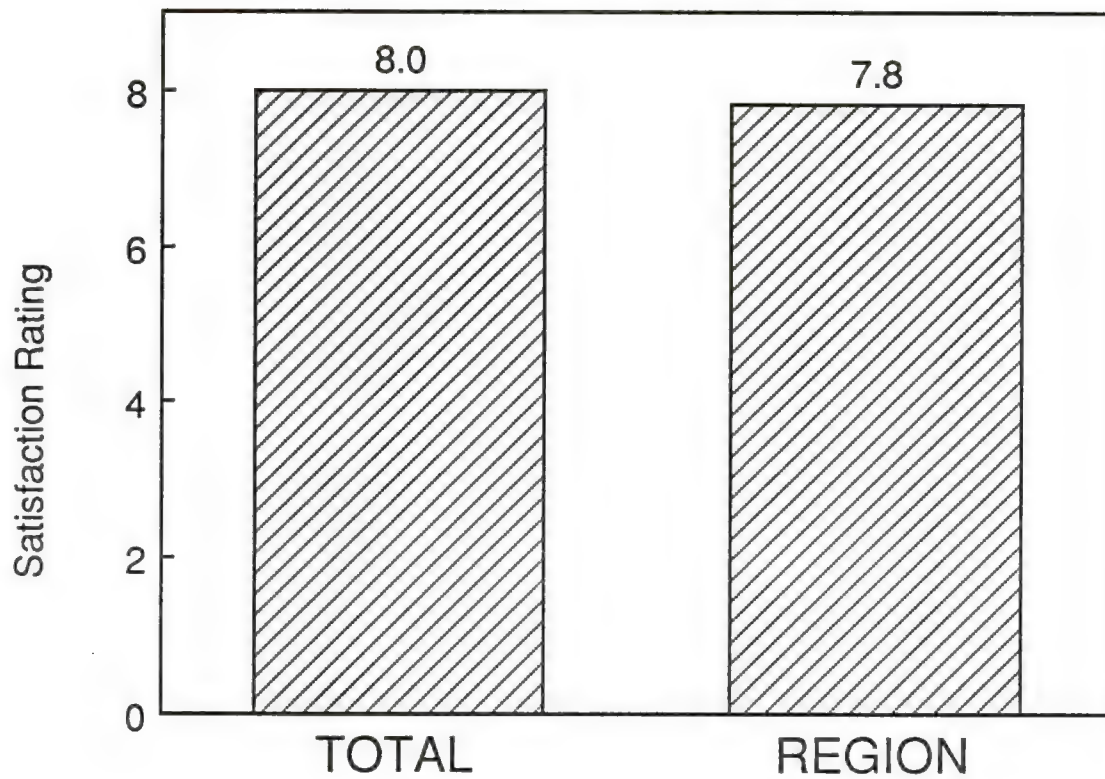
# UNITED KINGDOM REGION

INPUT





## CRAY LIVING UP TO EXPECTATIONS (United Kingdom Region)



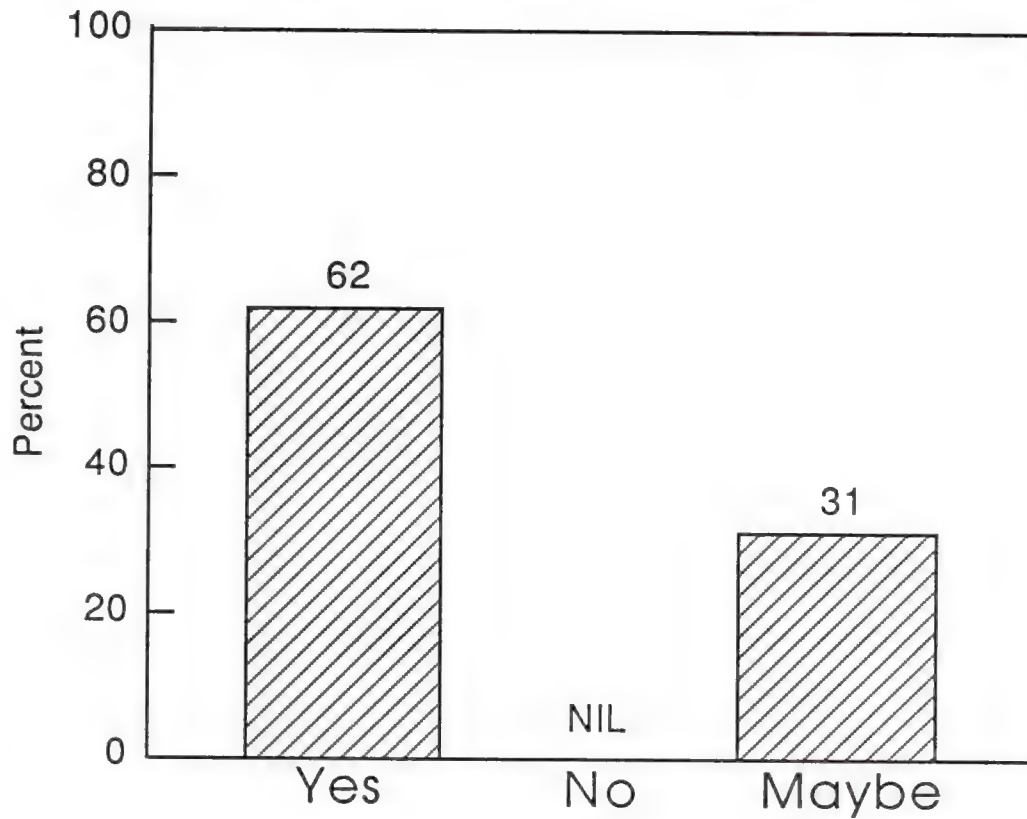
Q25: HOW WELL IS CRAY SYSTEM LIVING UP TO YOUR EXPECTATIONS?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.0	2	10	1.5	83
REGION—1988	7.8	2	10	2.1	13

INPUT



## BUY CRAY TOMORROW? (United Kingdom Region)



INPUT



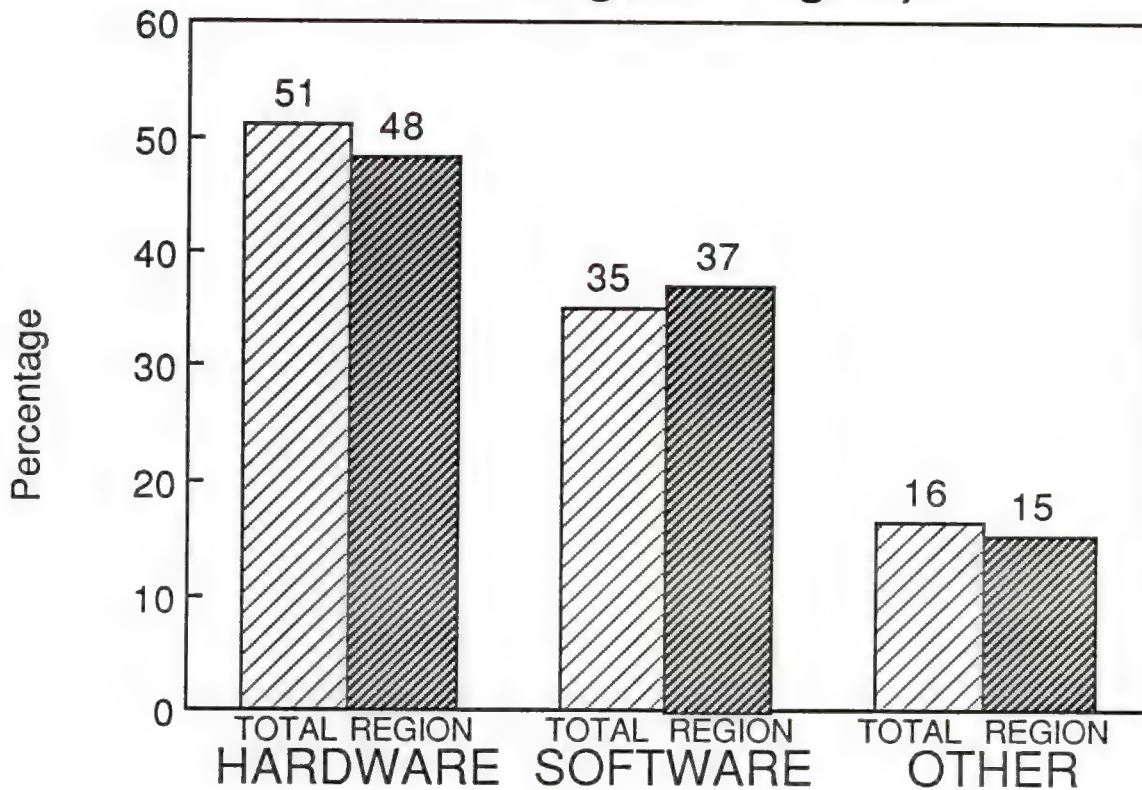
**DECISION CRITERIA IF BUY TODAY**  
(United Kingdom Region)

<u>Rank</u>		<u>Decision Importance</u>	<u>Cray Rate</u>
1	Overall Sys. Performance	9.2	8.2
2	Sys. SW Performance	8.8	8.3
2	Sys. SW Reliability	8.8	6.7
3	Hardware Reliability	8.6	7.9
4	Price Performance	8.3	7.1
4	Software Maintenance	8.3	7.8
5	Networking/Connectivity	8.1	7.3
5	Overall Systems Price	8.1	7.3
5	Sys. SW Functionality	8.1	6.8
6	Sys. SW Usability	7.9	7.5
7	Conversion Ease	7.5	7.6
8	Documentation	7.2	6.8
9	Application Software Avail.	6.8	7.3
10	Training	6.3	7.6

INPUT



## SYSTEM OUTAGE BY CAUSE (United Kingdom Region)



### Q7A. B. C: HARDWARE, SOFTWARE AND OTHER INTERRUPTION

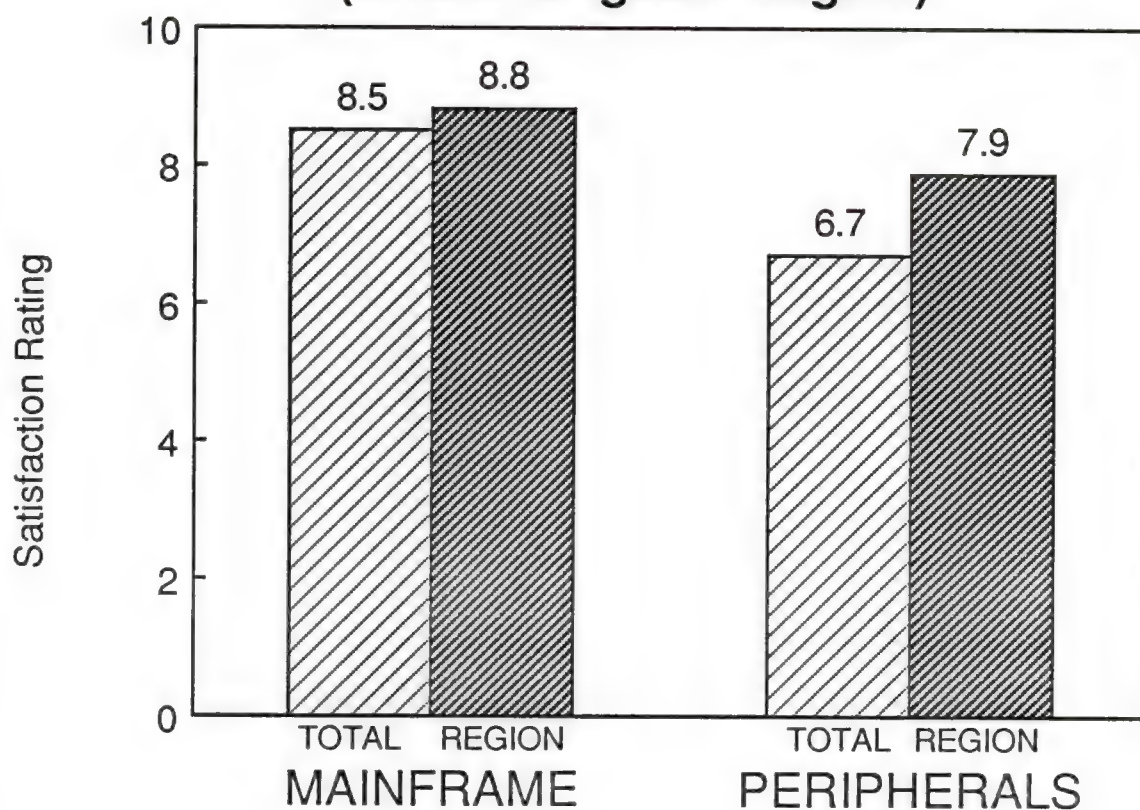
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
HARDWARE					
TOTAL—1988	51	8	100	26.9	76
REGIONAL—1988	48	8	100	27.4	14
SOFTWARE					
TOTAL—1988	35	0	85	24.2	74
REGIONAL—1988	37	0	79	25.1	14
OTHER					
TOTAL—1988	16	0	72	16.7	74
REGIONAL—1988	15	0	50	14.7	14

INPUT





# **HARDWARE SATISFACTION MAINFRAME/PERIPHERALS (United Kingdom Region)**



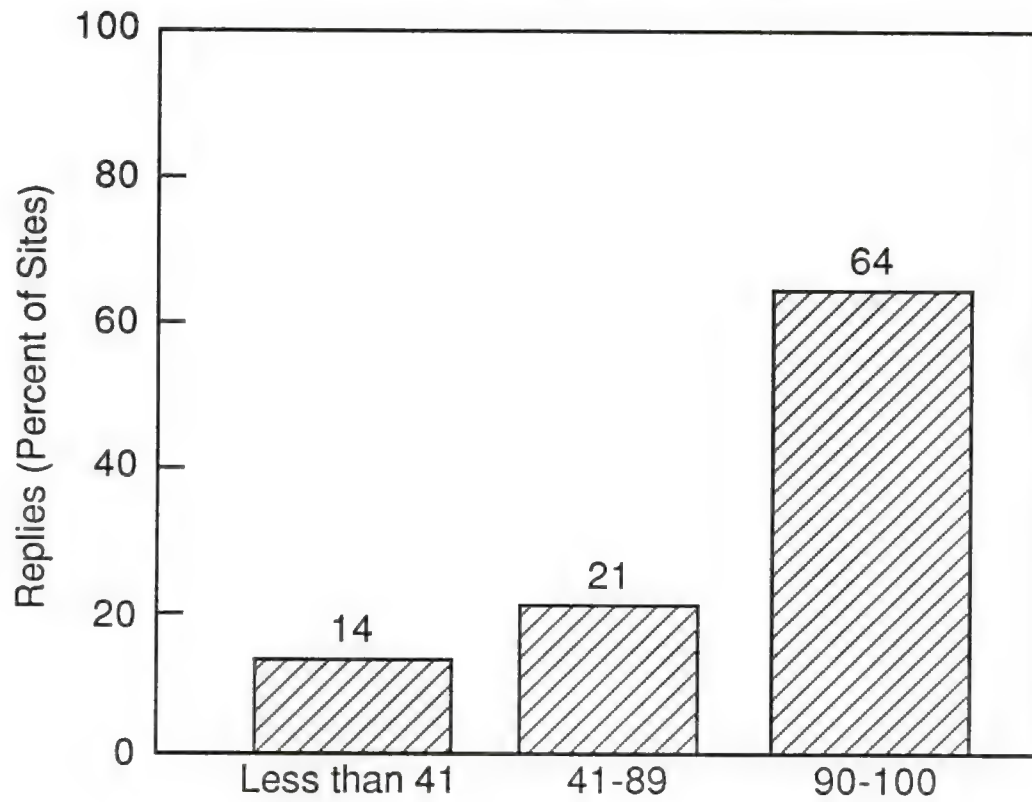
## Q10A, B: MAINFRAME/PERIPHERAL RELIABILITY

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
MAINFRAME					
TOTAL—1988	8.5	2	10	1.4	83
REGIONAL—1988	8.8	2	10	2.1	14
PERIPHERALS					
TOTAL—1988	6.7	1	10	2.3	83
REGIONAL—1988	7.9	5	10	1.7	14

INPUT



## UTILIZATION PROFILE (United Kingdom Region)

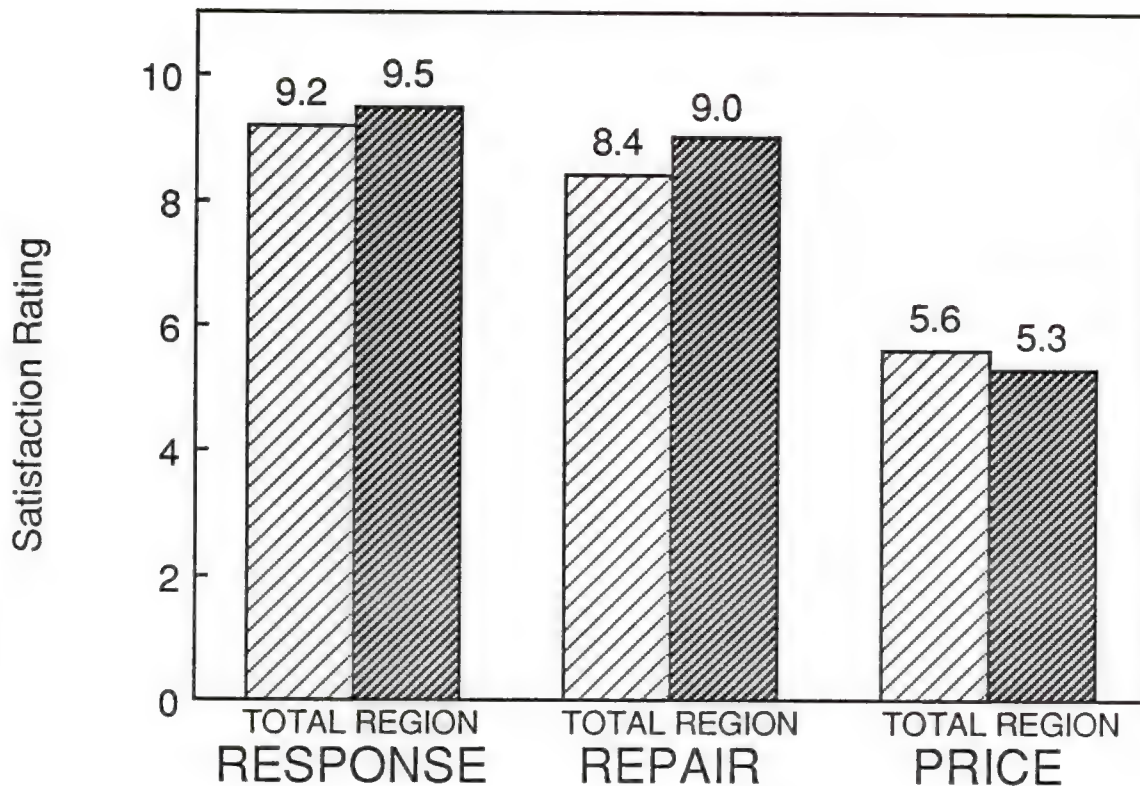


Q6: Average Monthly Utilization for Past 6 Months

INPUT



## MAINTENANCE RESPONSE SATISFACTION (United Kingdom Region)



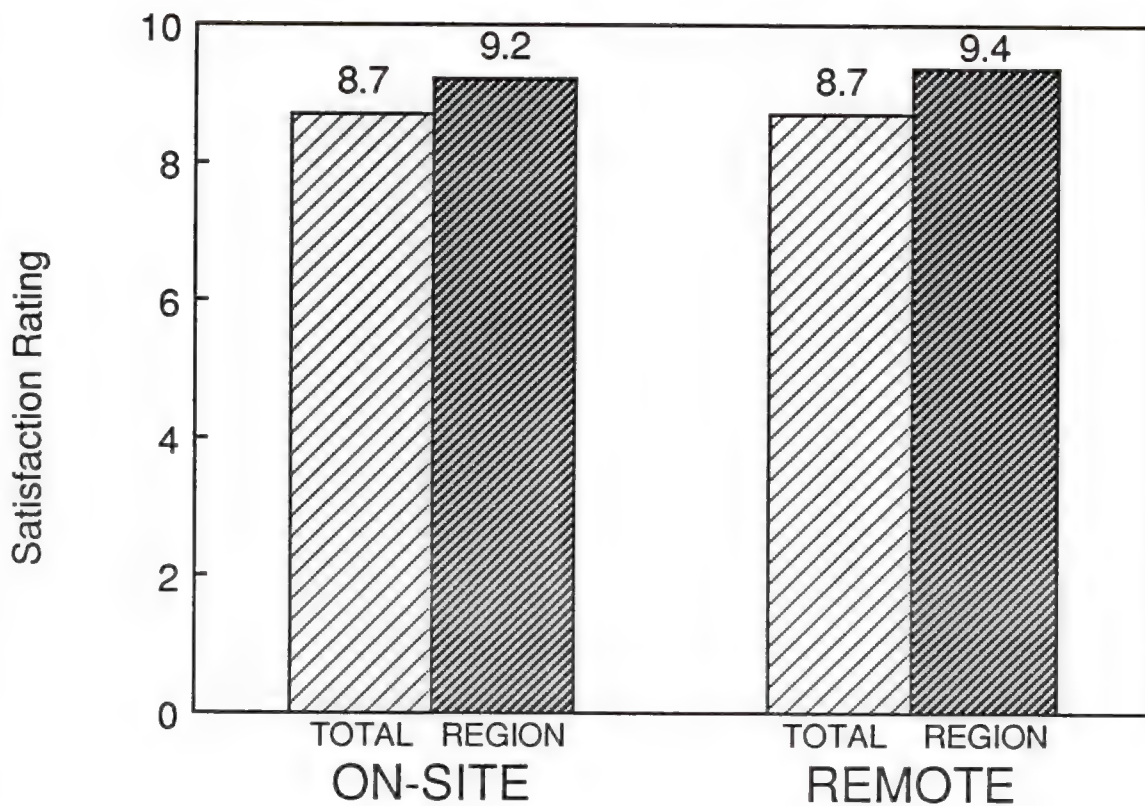
Q10C. D. E: HARDWARE MAINTENANCE, RESPONSE, REPAIR TIME AND PRICE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
RESPONSE					
TOTAL—1988	9.2	6	10	0.9	83
REGIONAL—1988	9.5	8	10	0.7	14
REPAIR					
TOTAL—1988	8.4	3	10	1.6	82
REGIONAL—1988	9.0	6	10	1.1	14
PRICE					
TOTAL—1988	5.6	1	10	2.5	74
REGIONAL—1988	5.3	1	10	3.3	13

INPUT



## ENGINEER SKILL LEVEL (United Kingdom Region)



### Q12E.F: CUSTOMER ENGINEER SKILL LEVEL RATINGS

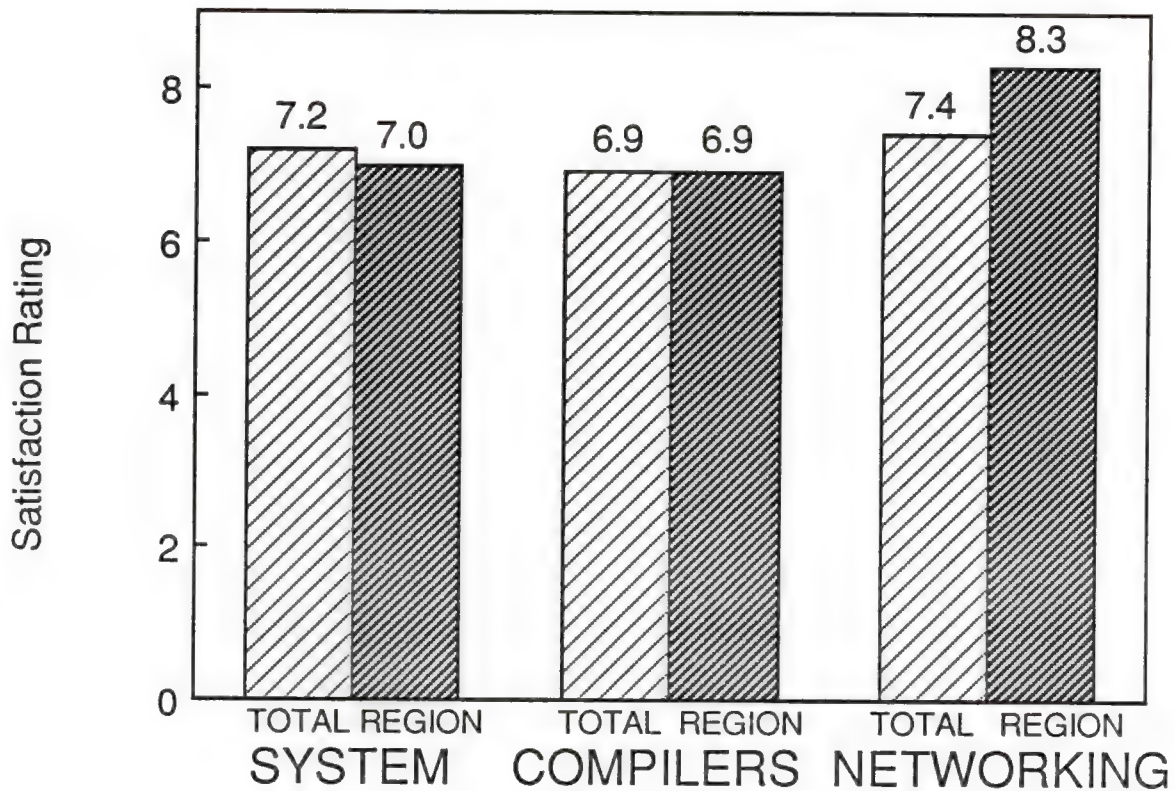
TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
ON-SITE					
TOTAL—1988	8.7	6	10	1.2	87
REGIONAL—1988	9.2	8	10	0.8	13
REMOTE					
TOTAL—1988	8.7	5	10	1.1	75
REGIONAL—1988	9.4	8	10	0.8	11

INPUT





## SOFTWARE RELIABILITY (United Kingdom Region)



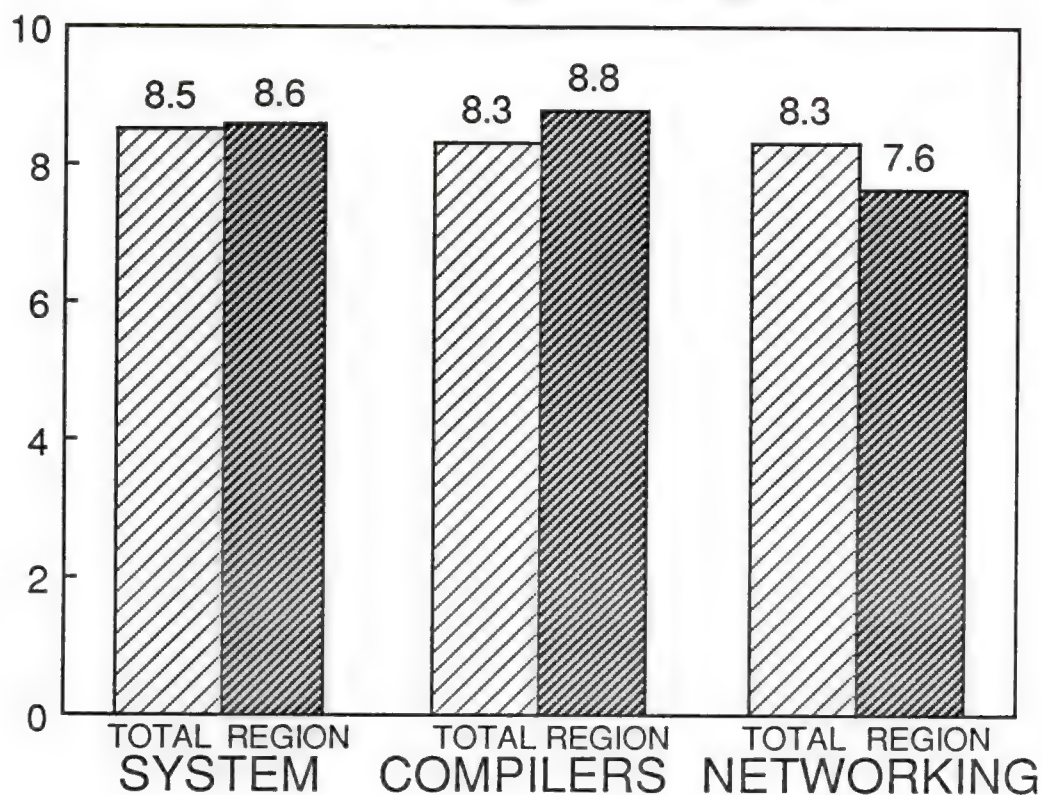
### Q13A. B. D: SYSTEM SOFTWARE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	7.2	1	10	2.0	78
REGIONAL—1988	7.0	1	10	2.2	14
COMPILERS (Fortran)					
TOTAL—1988	6.9	3	10	1.7	81
REGIONAL—1988	6.9	5	9	1.2	14
NETWORKING					
TOTAL—1988	7.4	3	10	1.9	25
REGIONAL—1988	8.3	7	10	1.5	3

INPUT



# SOFTWARE SUPPORT RATINGS LOCAL SITE SUPPORT (United Kingdom Region)



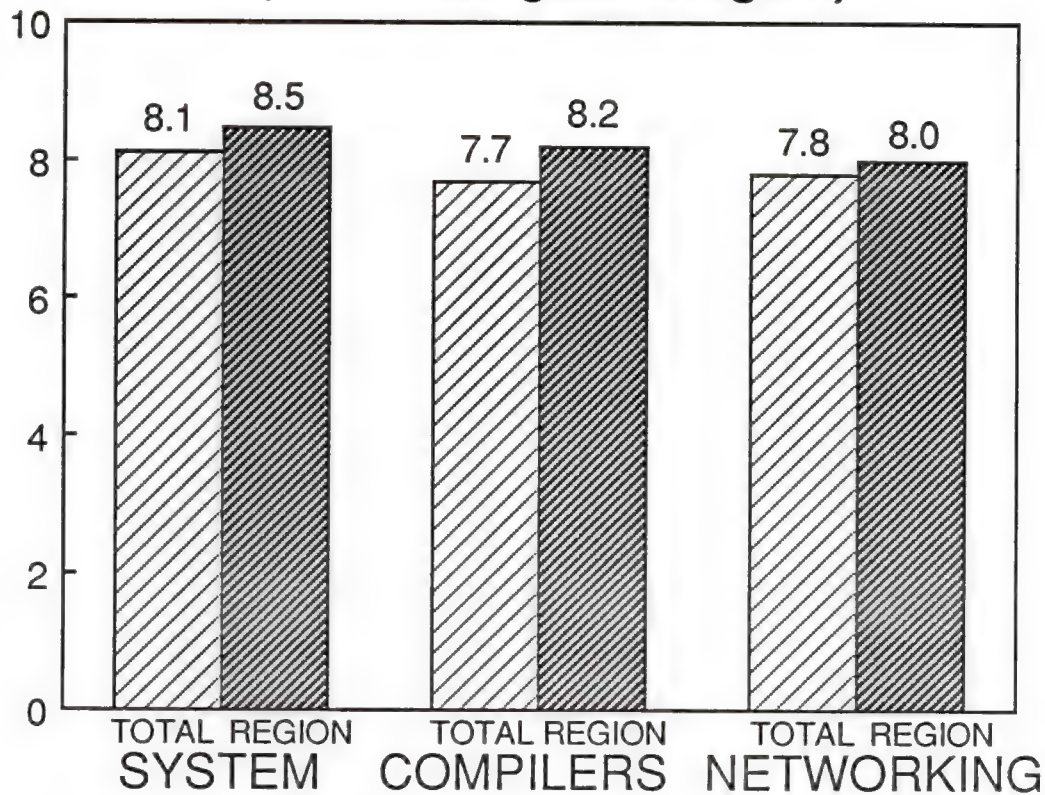
Q18A. B. D: SOFTWARE SUPPORT RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	8.5	3	10	1.7	75
REGIONAL—1988	8.6	5	10	1.6	13
COMPILERS (Fortran)					
TOTAL—1988	8.3	3	10	1.8	72
REGIONAL—1988	8.8	5	10	1.5	11
NETWORKING					
TOTAL—1988	8.3	3	10	1.9	35
REGIONAL—1988	7.6	3	10	3.4	5

INPUT



# SOFTWARE SUPPORT RATINGS FIELD SUPPORT (United Kingdom Region)



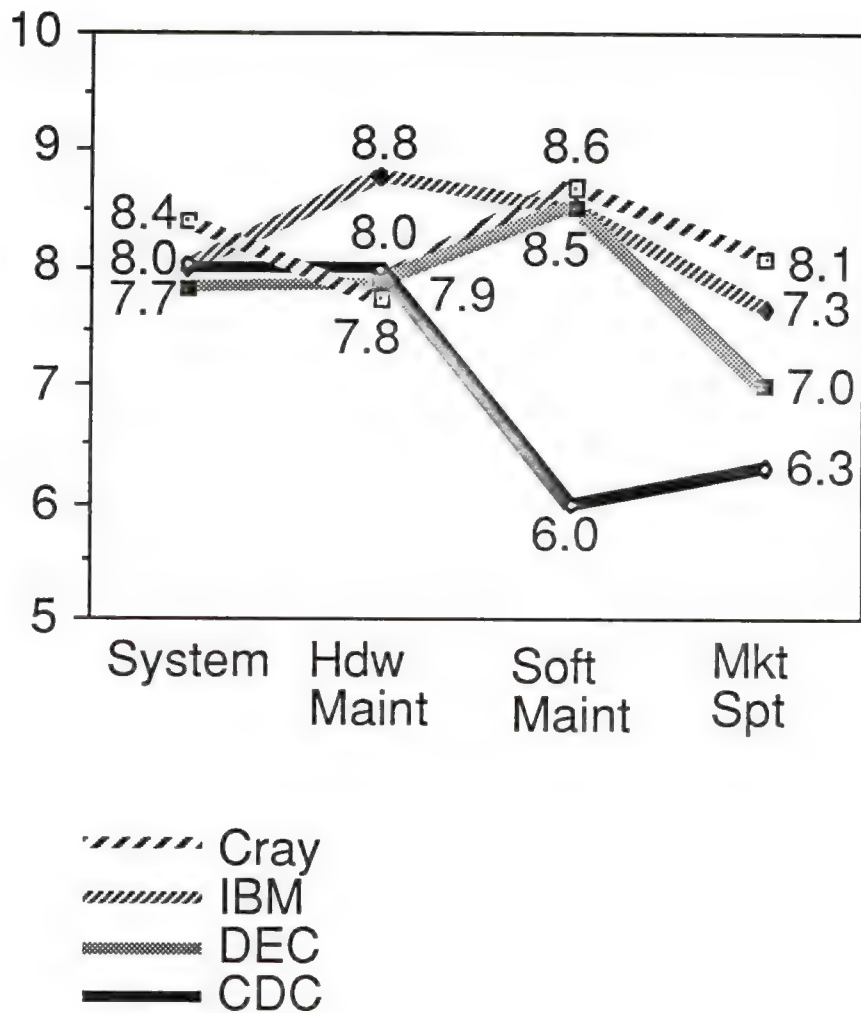
Q18A, B, D: SOFTWARE SUPPORT RATINGS

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
SYSTEM					
TOTAL—1988	8.1	4	10	1.4	47
REGIONAL—1988	8.5	7	10	1.3	4
COMPILERS (Fortran)					
TOTAL—1988	7.7	3	10	1.6	46
REGIONAL—1988	8.2	7	10	1.3	5
NETWORKING					
TOTAL—1988	7.8	4	10	1.5	24
REGIONAL—1988	8.0	7	9	1.4	2

INPUT



## VENDOR COMPARISONS (United Kingdom Region)



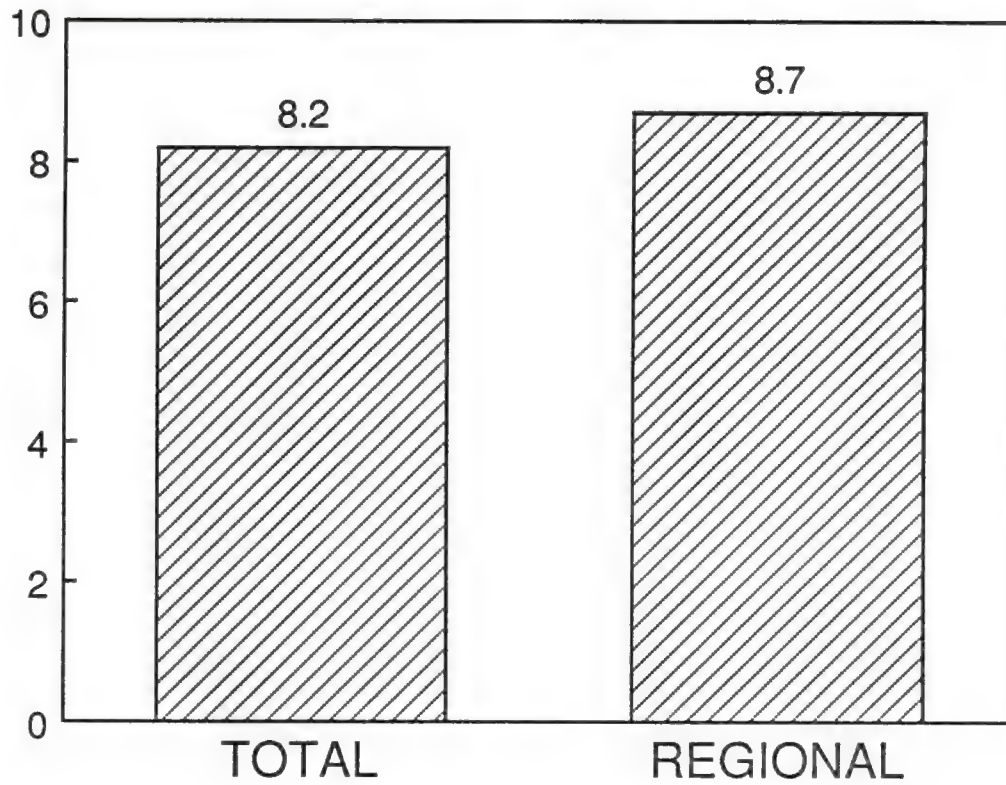
INPUT







# **MARKETING REPRESENTATIVE HELPFULNESS (United Kingdom Region)**



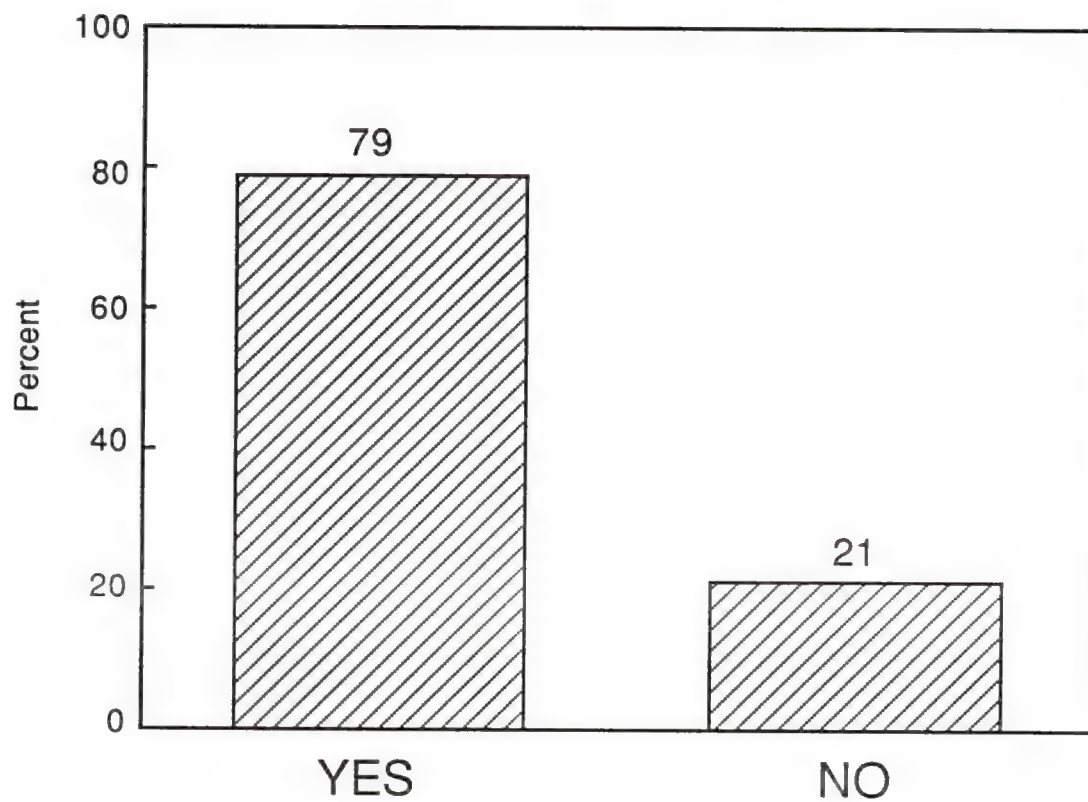
## Q28D: HELPFULNESS OF CRAY LOCAL MARKETING REPRESENTATIVE

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	8.2	3	10	1.7	80
REGION—1988	8.7	5	10	1.5	11

INPUT



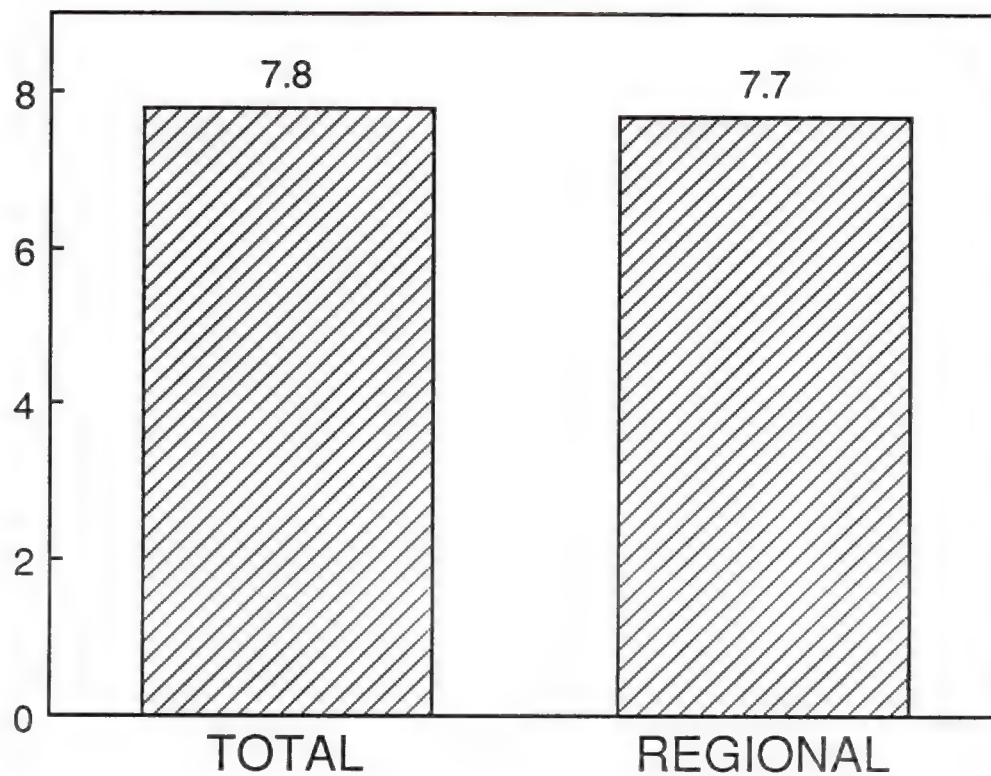
**KEPT AWARE ENOUGH OF CRAY'S  
HARDWARE/SOFTWARE DIRECTIONS (Q29)  
(United Kingdom Region)**



INPUT



## USER SATISFACTION WITH SYSTEM (United Kingdom Region)



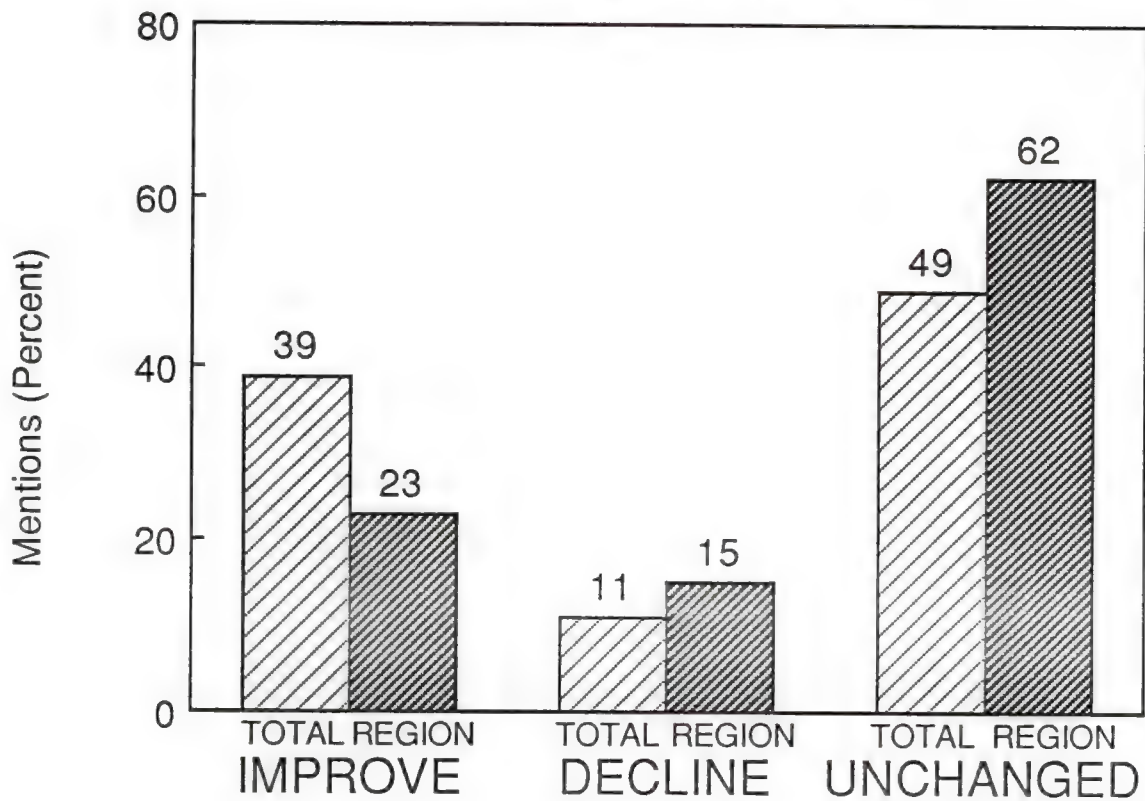
Q32B: HOW DO USERS RATE SATISFACTION WITH SYSTEM?

TYPE	MEAN	MIN.	MAX.	STD. DEV.	# CASES
TOTAL—1988	7.8	3	10	1.3	79
REGION—1988	7.7	5	10	1.6	14

INPUT



**HAS OVERALL SATISFACTION  
IMPROVED/DECLINED/UNCHANGED  
(United Kingdom Region)**

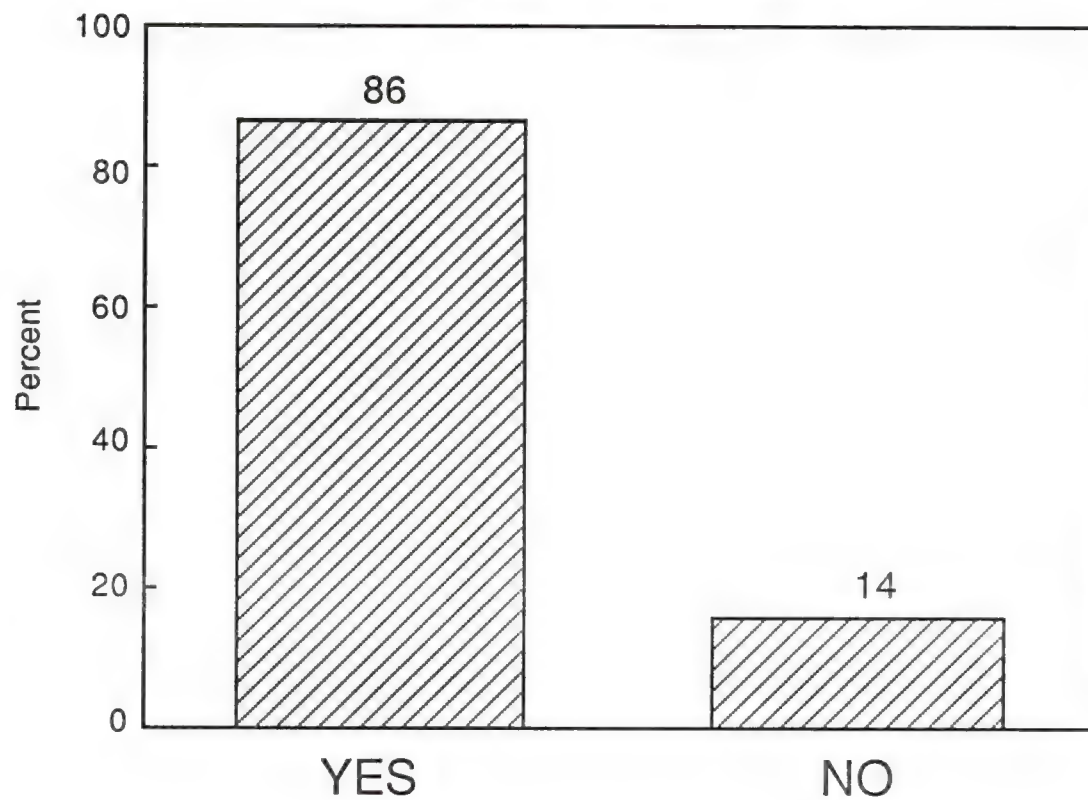


INPUT





**ENOUGH INTERACTION WITH CRAY  
CORPORATE MANAGEMENT (Q28G)  
(United Kingdom Region)**





## **RECOMMENDATIONS**

- **Customer-Based**
- **INPUT-Based**

INPUT



# **CUSTOMER-BASED RECOMMENDATIONS**

INPUT



## **CUSTOMER RECOMMENDATIONS (FREQUENT REQUESTS)**

Increase Top Management Interaction

- More CRI Senior Executive Visits to Client Site\*
  - Brief on Cray Directions\*
  - Cray-Initiated Visits\*
- Develop CRI "Vision of the Computing Future" Presentation\*

\*Also Recommended in 1986/1987 Survey

INPUT





## **CUSTOMER RECOMMENDATIONS (FREQUENT REQUESTS)**

### **Software**

- Provide More Feedback on SPR Status\*
  - Review Problem Histories/Status On-Line\*

\*Also Recommended in 1986/1987 Survey

INPUT



## **CUSTOMER RECOMMENDATIONS (MORE SYSTEM PLANNING SUPPORT)**

- More Analytical Price/Performance Tradeoffs\*
  - System Capabilities\*
  - Storage Tradeoffs\*
- More Performance Information\*
  - On Our Installation\*
  - On Other Installations\*

\*Also Recommended in 1986/1987 Survey

— INPUT —



## **CUSTOMER RECOMMENDATIONS (OTHER REQUESTS)**

- Pay More Attention to Old Customers\*
- More CRI-Initiated Middle Management Visits\*
  - Hardware Support Managers
  - Software Support Managers
- More CRI-Initiated Senior Management Visits
  - Publish Management-Level Journal Using Customer-Written Articles\*
  - Publicize Availability
- Set Up Innovative Users Forum to Advise CRI\*

\*Also Recommended in 1986/1987 Survey

INPUT



## **CUSTOMER RECOMMENDATIONS (OTHER REQUESTS)**

- More Product Announcement Information\*
- Satisfaction Survey
  - Reduce the Size

\*Also Recommended in 1986/1987 Survey

INPUT





# **INPUT-BASED RECOMMENDATIONS**

INPUT



## **INPUT RECOMMENDATIONS**

- **INPUT Recommendations**
  - Make Customers More Aware of Actions Taken
  - Strengthen Image of Hardware/Software Balance
  - Closely Track Competitors' Balance of Hardware/Software/Support
- **Make Customers More Aware of Action Taken**
  - Provide Additional Information
  - Provide It More Frequently
  - Example: Provide Monthly "Progress Report" (E-Mail, Electronic Bulletin Board)

INPUT

# THE RECOMMENDATIONS

assessing the impact of the

the Department of Health  
and

the Department of Health

the Department of Health

the Department of Health

the Department of Health

the Department of Health

the Department of Health

the Department of Health

the Department of Health

the Department of Health

## INPUT RECOMMENDATIONS

- Consider Expansions of Competitive Intelligence
  - Track Strategic Directions of Potential Competitors
    - Unix Standardization Plans
    - FORTRAN Quality
    - Hardware Reliability
    - Software Time to Repair
- Increase Industry Marketing/Support Efforts
  - Expand Aerospace Approach to Other Markets
- Survey Feedback
  - Provide More-Detailed Feedback
  - Send Results to Multiple Levels of Each Account

INPUT

# INPUT RECOMMENDATIONS

to improve methodology suggestions  
to the size of interviews of Major Customers  
in 1981

to the size of Questionnaire

to the format of

to the format of

to the format of

to the format of

to the format of

to the format of

to the format of

to the format of

## **INPUT RECOMMENDATIONS**

- 1989 Survey Methodology Suggestions
  - Do On-Site Interviews of Major Customers Each Year
  - Reduce Size of Questionnaire
    - More Focused
    - Specific Problem Areas
  - Do Follow Up Surveys if Needed
  - Continue to Do about 50% On-Sites
  - Send Questionnaire in Advance
  - Consider Phone Interview if Targeted Respondent Not Available for On-Site Interview

INPUT

THE UNIVERSITY OF MICHIGAN

IN THE  
COURT OF THE DISTRICT JUDGE  
OF THE DISTRICT OF COLUMBIA

JOHN J. MURPHY, Plaintiff,

vs.

JOHN J. MURPHY, Defendant.

JOHN J. MURPHY, Plaintiff,

vs.

JOHN J. MURPHY, Defendant.

JOHN J. MURPHY, Plaintiff,  
vs.  
JOHN J. MURPHY, Defendant.